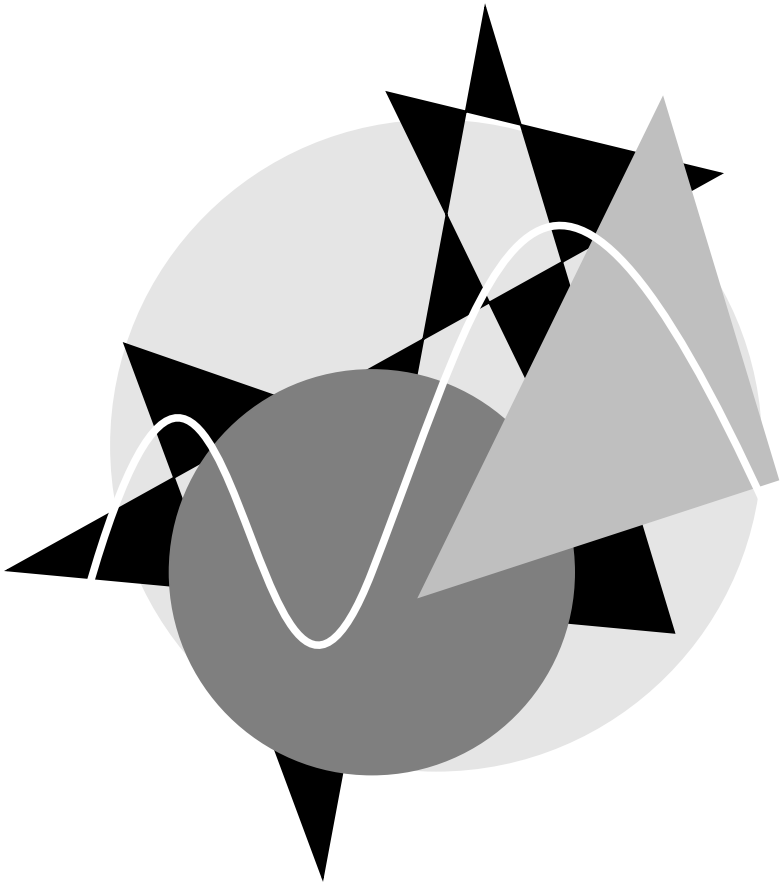
prACTice 4 success



an ACT workbook for the classroom

by

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A note to the teacher...

prACTice 4 success is a collection of worksheets intended to offer high school students, who have completed algebra and geometry, steady practice on problems similar to those encountered on the math portion of the ACT. Each worksheet has 3 problems and the students should be given exactly 3 minutes time to work them out. These worksheets can be used as a daily warm-up routine for the first five or so minutes of class time. It is important for the teacher to spend a few minutes going over the answers and possible strategies for solving the problems after the students complete each worksheet. We recommend that the teacher collects and grades each worksheet, keeping track of the total number of problems each student gets correct throughout the year. It may even be useful to design a game to go with these worksheets in order to hold the students' interest and motivate them to do their best while competing with their classmates.

*pr***ACT***ice* 1

1. Which of the following is equivalent to $(z)(z)(z)(z)(z)(z)$ for all z?

A. $6z$ **B.** $z+6$ **C.** z^6 **D.** 6^z **E.** $3z^3$

2. A rectangle is 3 times as long as it is wide. If the width of the rectangle is 2 inches, what is the rectangle's area in square inches?

A. 6 **B.** 12 **C.** 10 **D.** 7 **E.** 16

3. $5 \times 10^{-3} = ?$

A. $5,000$ **B.** 0.05 **C.** 500 **D.** $-5,000$ **E.** 0.005

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*pr***ACT***ice* 2

1. Which of the following is divisible by 3 with no remainder?

A. $2,020$ **B.** $1,452$ **C.** $3,133$ **D.** $7,105$ **E.** $4,225$

2. The concentration of a substance in a solution is 2×10^{-5} milligrams per milliliter. How many milligrams are in 3×10^8 milliliters?

A. 6×10^{-13} **B.** 5×10^{13} **C.** 5×10^3 **D.** 1×10^{-40}

E. 6×10^3

3. If one leg of a right triangle is 6 centimeters long, and the other leg is 8 centimeters long, how long is the triangle's hypotenuse?

A. 10 **B.** $2\sqrt{7}$ **C.** 15 **D.** $5\sqrt{2}$ **E.** $6\sqrt{2}$

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*pr***ACT***ice* 3

1. A jar contains 16 gum balls: 5 are yellow, 8 are red, and 3 are blue. Two gum balls are selected at random from the jar one at a time. If the first gum ball is red, what is the probability that the second gum ball will also be red?

A. $\frac{7}{16}$ **B.** $\frac{8}{16}$ **C.** $\frac{8}{15}$ **D.** $\frac{7}{15}$ **E.** $\frac{5}{15}$

2. If you have gone 5.5 miles in 30 minutes, what was your average speed, in miles per hour?

A. 11 **B.** 10 **C.** 165 **D.** 2.25 **E.** 82.5

3. If m and n are any real numbers such that $0 < m < 1 < n$, which of the following *must* be true of the value of $\frac{m}{n}$?

A. $1 < \frac{m}{n} < n$ **B.** $m < \frac{m}{n} < n$ **C.** $m < \frac{m}{n} < 1$ **D.** $0 < \frac{m}{n} < m$

E. $n < \frac{m}{n}$

*pr***ACT***ice* 4

1. How many solutions are there to the equation $2x^2 - 8 = 0$?

A. 8 **B.** 2 **C.** 4 **D.** 1 **E.** 0

2. If $3x = 2y - 1$, then $y =$?

A. $\frac{3}{2}x + 1$ **B.** $\frac{3}{2}x - 1$ **C.** $\frac{2}{3}x - 1$ **D.** $\frac{3x-1}{2}$ **E.** $\frac{3x+1}{2}$

3. When graphed in the (x, y) coordinate plane, at what point do the lines $x - y = 12$ and $y = 2$ intersect?

A. $(10, 2)$ **B.** $(2, 14)$ **C.** $(2, 12)$ **D.** $(14, 2)$ **E.** $(12, 2)$

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*pr***ACT***ice* 5

1. A circle with center $(-5, 1)$ is tangent to the y-axis in the standard (x, y) coordinate plane. What is the radius of this circle?

A. 5 **B.** 1 **C.** $\sqrt{6}$ **D.** 4 **E.** 6

2. Which of the following completely describes the solution set for $2(x + 1) = 2x + 2$?

A. $x = -1$ **B.** $x = 1$

C. All real numbers are solutions for x. **D.** $x = 2$

E. There are no solutions for x.

3. For all $x > 0$, $\frac{2x^2 + 3x + 1}{x + 1}$ simplifies to:

A. $x + 1$ **B.** $2(x + 1)$ **C.** $2x + 1$ **D.** $(2x + 1)(x + 1)$

E. $2x^2 + 2x$

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*pr***ACT***ice* 6

1. If Janet is 2 years older than her brother, Tim, and Andrew is 5 years older than Janet, and the sum of all 3 of their ages is 42, then how old is Tim?

A. 35 **B.** 5 **C.** 13 **D.** 18 **E.** 11

2. If $x = 3z$ and $z = 2y$, then $x =$?

A. 3 **B.** $2y$ **C.** $5y$ **D.** $6y$ **E.** $2z$

3. Tina made \$121 this week for working 22 hours. How much will she make next week if she gets paid at the same rate but only works 14 hours?

A. \$100 **B.** \$77 **C.** \$64.50 **D.** \$114 **E.** \$44.25

*pr***ACT***ice 7*

1. If the value of A, B and C in the following fraction are all doubled, how does the value of the fraction change?

$$\frac{A \cdot D}{C \cdot B}$$

A. doubles **B.** increases by half

C. stays the same **D.** decreases by half

E. quadruples

2. Which of the following fractions is the equivalent of 0.2%?

A. $\frac{1}{5}$ **B.** $\frac{1}{50}$ **C.** $\frac{1}{500}$ **D.** $\frac{1}{1000}$ **E.** $\frac{1}{20}$

3. $\frac{2}{3} - \frac{3}{4} = ?$

A. $-\frac{1}{12}$ **B.** $\frac{1}{12}$ **C.** 1 **D.** $-\frac{9}{8}$ **E.** $-\frac{8}{9}$

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*pr***ACT***ice 8*

1. What is the next term in the following sequence?

$$1, \frac{2}{3}, \frac{4}{9}, \frac{8}{27}, \text{——}$$

A. $\frac{30}{81}$ **B.** $\frac{24}{81}$ **C.** $\frac{16}{54}$ **D.** 2 **E.** $\frac{16}{81}$

2. What is x^{12} divided by x^{14}?

A. x^2 **B.** x^{26} **C.** $x^{6/7}$ **D.** $\frac{1}{x^2}$ **E.** x^{168}

3. .0000123 equals:

A. 1.23×10^{-5} **B.** 1.23×10^{5} **C.** 12.3×10^{-5} **D.** 1.23×10^{-6}

E. $.123 \times 10^{-6}$

*pr***ACT***ice* 9

1. The average of three numbers is x. If the first number is y and the second number is z, what is the third number?

A. $\frac{1}{3}x - y - z$ **B.** $3x - y - z$ **C.** $x - 3y - 3z$ **D.** $3x + y + z$

E. $\frac{x+y+z}{3}$

2. If two cowboys leave a ranch at 9:00 am, how far apart will they be at 11:00 am if one travels directly north at 20 mph and the other travels directly west at 15 mph?

A. 25 miles **B.** 35 miles **C.** 70 miles **D.** 50 miles

E. 500 miles

3. Which of the following is **NOT** a rational number?

A. $\sqrt{3}$ **B.** $\sqrt{4}$ **C.** $\sqrt{\frac{1}{9}}$ **D.** $2.18333\overline{33}\ldots$ **E.** 1.13342

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*pr***ACT***ice* 10

1. If a circle has diameter 4, what is its area?

A. 16π **B.** 2π **C.** 4π **D.** 8π **E.** 6π

2. If a circle has circumference 8π, what is its area?

A. 8π **B.** 4π **C.** 32π **D.** 16π **E.** 64π

3. A rectangular prism has volume 128 in^3. If the length of its base is 4 inches and its height is two times the width of its base, what is its height?

A. 24 inches **B.** 16 inches **C.** 8 inches **D.** 12 inches

E. 4 inches

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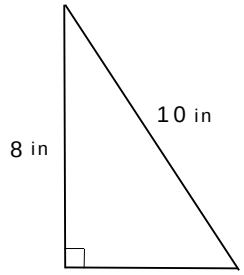
*pr***ACT***ice* 11

1. What is the area of the triangle below?



A. 24 in **B.** 48 in^2 **C.** 40 in^2 **D.** 80 in^2 **E.** 24 in^2

2. The sum of the product of two positive numbers and two times their difference is 16. Their difference is 3. What are the two numbers?

A. 1 and 8 **B.** 4 and 5 **C.** 10 and 3 **D.** 2 and 5 **E.** 3 and 5

3. Tom needs to be at the airport in 30 minutes, but the airport is 27 miles away. What is the minimum speed he must drive in order to get there on time?

A. 54 mph **B.** 56 mph **C.** 14 mph **D.** 27 mph **E.** 30 mph

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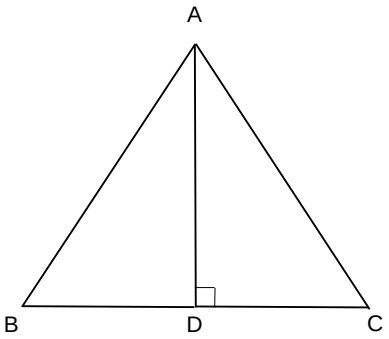
*pr***ACT***ice* 12

1. In the standard (x,y) coordinate plane, what is the area of the triangle formed by the lines $y=0$, $x=0$ and the line connecting the points $(0,3)$ and $(5,0)$?

A. 7.5 units **B.** 15 units **C.** 12 units **D.** 8 units

E. 8.5 units

2. In the figure below, $\overline{BD} \cong \overline{DC}$ and $\overline{BC}$ is 20 units long. If $\overline{AD}$ is the altitude of $\triangle ABC$, what is the area, in square centimeters, of $\triangle ABC$?



A. 40 **B.** $20\sqrt{2}$

C. Cannot be determined by the given information. **D.** $\frac{15}{2}$

E. 10

3. What are the x-intercepts in the graph of $y=x^2-3x-4$?

A. 4 and 1 **B.** 2 and -2 **C.** -4 and 1 **D.** 3 and -2

E. 4 and -1

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*pr***ACT***ice* 13

1. Which of the following is equal to $\sqrt{72}$?

A. $2\sqrt{6}$ **B.** $6\sqrt{2}$ **C.** $9\sqrt{8}$ **D.** $36\sqrt{2}$ **E.** $18\sqrt{2}$

2. What is the slope of the line $6y = 12 - 3x$?

A. $\frac{1}{2}$ **B.** 2 **C.** -2 **D.** $-\frac{1}{2}$ **E.** -4

3. What is the largest possible product for two odd integers whose sum is 28?

A. 196 **B.** 192 **C.** 195 **D.** 187 **E.** 171

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*pr***ACT***ice* 14

1. A box of oatmeal contains $17\frac{1}{2}$ cups of oatmeal. At most, how many people can you serve from this box of oatmeal if a serving must be at least $\frac{3}{4}$ cup?

A. 23 people **B.** 24 people **C.** 21 people **D.** 22 people

E. 25 people

2. What is the least value of y satisfying the equation $y^2 - 5 = 3y - 5$?

A. 3 **B.** 0 **C.** -3 **D.** -2 **E.** 5

3. If $x + 3y = 19$ and $3x + y = 5$, then $x + y =$?

A. 3 **B.** 4 **C.** 5 **D.** 6 **E.** 7

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*pr***ACT***ice* 15

1. What positive value of k would make the lines below parallel in the standard (x, y) coordinate plane?

$$\begin{aligned} kx + 4y &= 15 \\ 16x + ky &= 10 \end{aligned}$$

A. 16 **B.** -8 **C.** 8 **D.** 4 **E.** 0

2. If $y = 3$, then $\frac{2}{\frac{1}{y} + \frac{1}{2}}$=?

A. $\frac{12}{5}$ **B.** 2 **C.** $\frac{6}{5}$ **D.** $\frac{5}{12}$ **E.** $\frac{5}{6}$

3. When $x = 5$, $x^2 + kx - 40 = 0$. What is the value of k?

A. 0 **B.** 4 **C.** 2 **D.** 1 **E.** 3

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*pr***ACT***ice* 16

1. If y is a real number greater than $5{,}000{,}000$, which of the following fractions is smallest in value?

A. $\frac{y}{3}$ **B.** $\frac{3}{y}$ **C.** $\frac{3}{y-1}$ **D.** $\frac{3}{y+1}$ **E.** $\frac{y+1}{3}$

2. What is the product of the two real solutions to the equation $x^2 = 12 + 4x$?

A. -12 **B.** -4 **C.** 4 **D.** 12 **E.** -8

3. What integer most nearly approximates $(\sqrt{65})(\sqrt{35})$?

A. 40 **B.** 48 **C.** 56 **D.** 54 **E.** 42

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*pr***ACT***ice* 17

1. If $\dfrac{3}{x-2} = \dfrac{4}{x+3}$, then $x =$?

A. 17 **B.** 16 **C.** 1 **D.** -1 **E.** 2

2. Which of the following equations describes a line that passes through the origin and is parallel to the line $3x - 2y = 10$?

A. $x - y = 0$ **B.** $3x + 2y = 0$ **C.** $2y - 3x = 10$ **D.** $2y - 3x = 0$

E. $3y + 2x = 0$

3. $|10 - 14| - |8 - 3| =$?

A. 1 **B.** -9 **C.** 9 **D.** -1 **E.** 13

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*pr***ACT***ice* 18

1. If $13b = 65$, then $b^2 =$?

A. 65 **B.** 25 **C.** 13 **D.** 125 **E.** 81

2. If 65% of the weight of a 600-pound motorcycle should be supported by the rear wheel, how many pounds should be supported by the rear wheel?

A. 450 **B.** 360 **C.** 410 **D.** 400 **E.** 390

3. What is the average of $\dfrac{5}{8}$ and 0.175?

A. 0.35 **B.** 0.4 **C.** 0.3825 **D.** 0.15 **E.** 0.4125

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*pr***ACT***ice* 19

1. There are n students on a school bus. If, among those students, $p\%$ play at least one sport, which of the following general expressions represents the number of students who play **NO** sports?

A. $100(1-p)n$ **B.** $\dfrac{n(1-p)}{.01}$ **C.** $\dfrac{n(100-p)}{100}$ **D.** $.01np$ **E.** np

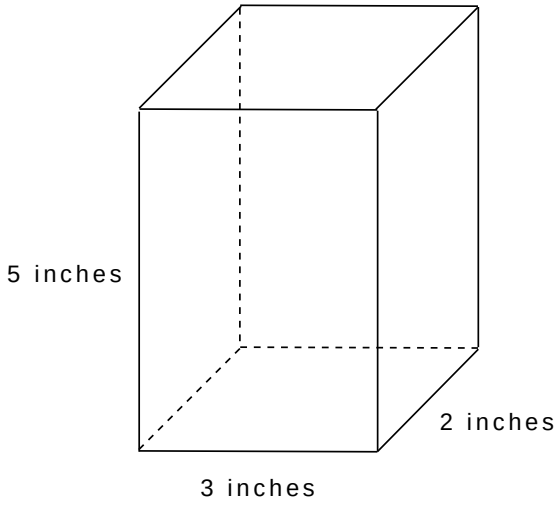
2. Five authors write a book together and as a group, they get 35% of the money from the sales of their new book. That 35% is split equally among the 5 authors. If the book generates $\$1,500,000$ in sales, how much does one author receive?

A. $\$450,000$ **B.** $\$525,000$ **C.** $\$125,000$ **D.** $\$105,000$

E. $\$90,000$

3. The total surface area of the rectangular box shown below is the sum of the areas of the 6 sides. What is the box's total surface area, in square inches?

A. 30
B. 62
C. 60
D. 20
E. 48



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*pr***ACT***ice* 20

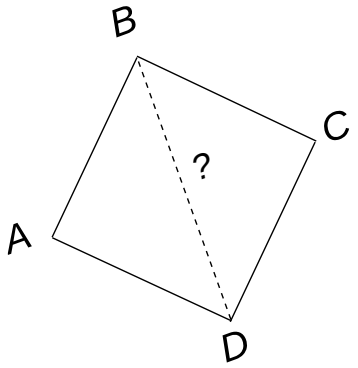
1. A circular pancake has a radius of $\frac{11}{8}$ inches. When lying flat on a frying pan, how much area does the pancake cover, in square inches?

A. $\frac{121\pi}{64}$ **B.** $\frac{11\pi}{4}$ **C.** $\frac{121\pi}{128}$ **D.** $\frac{11\pi}{16}$

E. $\frac{121\pi}{8}$

2. Square $ABCD$ below has an area of 81 in^2. How many inches long is diagonal $\overline{BD}$?

A. $9\sqrt{3}$
B. 18
C. 9
D. 6
E. $9\sqrt{2}$



3. The area of a trapezoid is $\frac{1}{2}h(b_1+b_2)$, where h is the altitude, and b_1 and b_2 are the lengths of the parallel bases. If a trapezoid has an altitude of 6 inches, an area of 48 in^2, and one base 7 inches long, what is the length, in inches, of its other base?

A. 8 **B.** 10 **C.** 7 **D.** 9 **E.** 6

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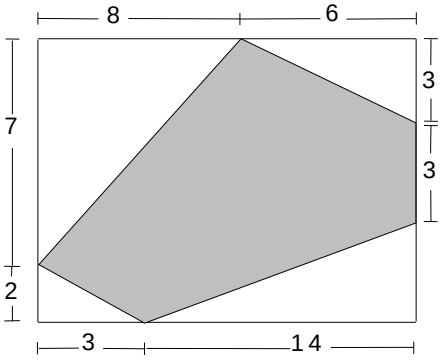
*pr***ACT***ice* 21

1. Lengths are shown in inches in the drawing of the rectangle below. What is the shaded area, in square inches?



A. 41 **B.** 90 **C.** 61 **D.** 69 **E.** 66

2. Over all real numbers x, what is the minimum value of $6\cos(5x)$?

A. -6 **B.** 5 **C.** -5 **D.** 6 **E.** $\frac{6}{5}$

3. If the angles $\angle X$ and $\angle Y$ each measure between 90° and 180°, and if $\sin X = -\cos Y$, what is the *sum* of the measures of the angles $\angle X$ and $\angle Y$?

A. 135° **B.** 270° **C.** 225° **D.** 335° **E.** 180°

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*pr***ACT***ice* 22

1. A television is on sale for $\$1,200$, which is a 40% discount of the regular price. What is the regular price of the television?

A. $\$2,200$ **B.** $\$1,900$ **C.** $\$1,800$ **D.** $\$2,100$ **E.** $\$2,000$

2. Which of the following fractions is equivalent to 0.05%?

A. $\frac{1}{2000}$ **B.** $\frac{1}{20}$ **C.** $\frac{1}{200}$ **D.** $\frac{1}{500}$ **E.** $\frac{1}{5000}$

3. Two helicopters leave the same army base at 2:00 pm. How far apart will they be at 4:00 pm if one flies due north at 120 mph and the other flies due west at 90 mph?

A. 240 miles **B.** 180 miles **C.** 150 miles **D.** 300 miles

E. 320 miles

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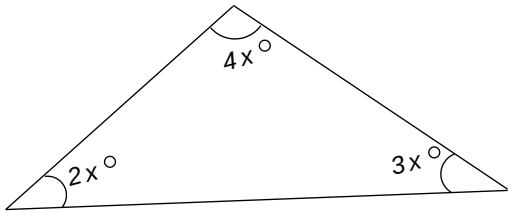
*pr***ACT***ice* 23

1. What is the cost, in dollars, to install linoleum in a rectangular room W yards wide and L yards long if it costs \$1.50 per square foot?

A. $1.5WL$ **B.** $.5WL$ **C.** $13.5WL$ **D.** $.15WL$ **E.** $14.5WL$

2. The measures of the angles of a triangle are in the ratio of $2x : 3x : 4x$ as illustrated below. What is the measure of the largest angle in the triangle?



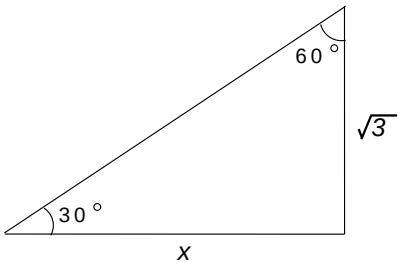
A. 40° **B.** 60° **C.** 20° **D.** 80° **E.** 90°

3. The ingredients for a certain chocolate chip cookie recipe are: 1 cup chocolate chips, $\frac{1}{3}$ cup eggs, $\frac{1}{2}$ cup flour, $\frac{2}{3}$ cup sugar, and $\frac{1}{4}$ cup butter. How many total cups of ingredients are used in this recipe for chocolate chip cookies?

A. $1\frac{2}{3}$ **B.** $1\frac{11}{12}$ **C.** 2 **D.** $2\frac{1}{2}$ **E.** $2\frac{3}{4}$

*pr***ACT***ice* 24

1. Lengths for the triangle below are given in inches. What is the value of x?



A. $2\sqrt{3}$ **B.** 2 **C.** $\frac{2}{\sqrt{3}}$ **D.** 3 **E.** $\sqrt{3}$

2. If $r = 3z$, $15z = 20x$, and $10x = 2y$, then $r =$?

A. $\frac{5}{2}y$ **B.** $\frac{5}{4}y$ **C.** $\frac{1}{5}y$ **D.** $5y$ **E.** $\frac{4}{5}y$

3. 65% of what number is 130?

A. 210 **B.** 200 **C.** 190 **D.** 180 **E.** 160

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*pr***ACT***ice* 25

1. At a certain store, an 8-pound bag of flour costs \$3.84. What is the cost per ounce of flour? (There are 16 ounces in a pound.)

A. \$0.02 **B.** \$0.03 **C.** \$0.30 **D.** \$0.20 **E.** \$0.06

2. A right triangle has sides of length 18, 24, and 30 square meters. What is the area of the right triangle, in meters?

A. 216 **B.** 432 **C.** 360 **D.** 270 **E.** 640

3. A fair coin is tossed in the air 3 times. What is the probability that the coin will come up heads exactly two of the times? (A fair coin is just as likely to come up heads as tales.)

A. $\frac{3}{4}$ **B.** $\frac{3}{8}$ **C.** $\frac{2}{3}$ **D.** $\frac{1}{4}$ **E.** $\frac{2}{9}$

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*pr***ACT***ice* 26

1. How many ways are there to pick 5 people from a committee of 9 people?

A. 126 **B.** 42 **C.** 72 **D.** 56 **E.** 54

2. In July, Bob made 10% more money than he did in June. In August, he made 10% more than in July. If Bob made \$1,500 in June, how much did he make in August?

A. \$1,815 **B.** \$1,996.50 **C.** \$1,650 **D.** \$2,010.50

E. \$1,950

3. In the figure below, $\angle Y$ is a right angle and the measure of $\angle X$ is $60°$. If $\overline{XY}$ is 5 units long, how many units long is $\overline{YZ}$?

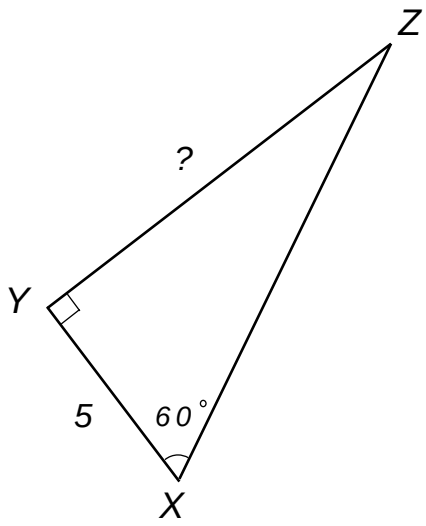
A. $5\sqrt{2}$

B. $\dfrac{5}{\sqrt{3}}$

C. $\dfrac{5}{2}$

D. 10

E. $5\sqrt{3}$



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*pr***ACT***ice* 27

1. Which of the following sets is **NOT** closed under addition?

A. Odd numbers **B.** Even numbers

C. Integers **D.** Rational numbers

E. All are closed under addition.

2. If $a > c$ and $b > d$, then which if the following statements are true about $|a-d|$ and $|c-b|$?

A. $|a-d| < |c-b|$ **B.** $\left|\dfrac{a-d}{c-b}\right| < 1$

C. $|a-d| = |c-b|$ **D.** $|a-d| > |c-b|$

E. None of the above is true.

3. Which of the following could **NOT** be a solution to $5-2x < -3$?

A. 8 **B.** 7 **C.** 6 **D.** 5 **E.** 4

*pr***ACT***ice* 28

1. John is 5 years older than Samantha and Samantha is twice as old as Tim. If the sum of their ages is 95, how old is John?

A. 36 **B.** 18 **C.** 41 **D.** 31 **E.** 45

2. What is the value of b that makes the two lines, given by $3x-y=4$ and $2y+4bx=1$, perpendicular?

A. -3 **B.** $\frac{3}{2}$ **C.** $\frac{-3}{2}$ **D.** $-\frac{1}{3}$ **E.** $\frac{1}{6}$

3. Bill can mop a floor in 20 minutes, while Jim can mop the same floor in 12 minutes. It takes Andy half an hour to mop the floor. If all three work together, how long will it take them to mop the floor?

A. 6 minutes **B.** 7 minutes **C.** 8 minutes **D.** 9 minutes

E. 10 minutes

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*pr***ACT***ice* 29

1. During the first week of a certain month, a computer store sells 11 computers. A sale begins on the second week of the month and during the second week, the computer store sells 17 computers. What was the percent increase in sales from the first week of the month to the second week of the month?

A. 64.7% **B.** 154.5% **C.** 164.7% **D.** 35% **E.** 54.5%

2. During a 4-day carnival, the attendance triples in size each day. If the attendance on Wednesday is 565 people, how many people are in attendance on Saturday?

A. 5,085 **B.** 15,255 **C.** 45,765 **D.** 6,780 **E.** 1,695

3. $\frac{1}{90}-\frac{7}{12}=?$

A. $\frac{103}{180}$ **B.** $\frac{1}{90}$ **C.** $\frac{105}{180}$ **D.** $-\frac{103}{180}$ **E.** $-\frac{107}{180}$

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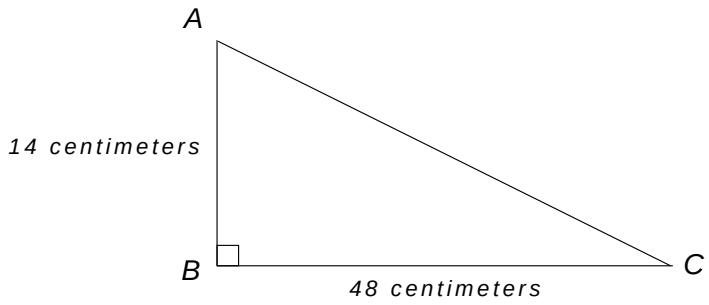
*pr***ACT***ice* 30

1. The average person drinks the equivalent of 8, (8 ounce) glasses of water per day. A person who drinks 25.6 ounces of water in a day drinks what fraction of the average amount?

A. $\frac{5}{2}$ **B.** $\frac{16}{5}$ **C.** $\frac{5}{16}$ **D.** $\frac{2}{5}$ **E.** $\frac{1}{8}$

2. In the right triangle $\triangle ABC$ below, what is the cosine of $\angle A$?



A. $\frac{7}{24}$ **B.** $\frac{24}{7}$ **C.** $\frac{24}{25}$ **D.** $\frac{7}{25}$ **E.** $\frac{14}{25}$

3. What is the x-value at which the graphs of $y = x^2 - 2x + 1$ and $y = x^2 + 2x - 7$ intersect?

A. 2 **B.** The graphs do not intersect. **C.** 8 **D.** $\frac{3}{2}$ **E.** $\frac{1}{2}$

---

*pr***ACT***ice* 31

1. If x is a positive real number such that $x^2 = 81$, then $x^3 - (x + \sqrt{x}) =$?

A. 729 **B.** 717 **C.** 720 **D.** 711 **E.** 723

2. What is the value of $\log_3 81$?

A. 3 **B.** 4 **C.** 9 **D.** 27 **E.** 81

3. If the sides of a triangle are 6, 8, and 10 inches long, what is the angle between the two shortest sides?

A. 45° **B.** 180° **C.** 90° **D.** 60° **E.** 30°

---

*pr***ACT***ice* 32

1. Let N equal $4x - 2y + 1$. What happens to the value of N if x is increased by 2 and y is decreased by 1?

A. It decreases by 2. **B.** It decreases by 3.

C. It increases by 1. **D.** It increases by 6.

E. It increases by 10.

2. If the edges of a cube are doubled in length to produce a new, larger cube, then the larger cube's surface area is how many times larger than the smaller cube's surface area?

A. 2 **B.** 4 **C.** 8 **D.** 16 **E.** 32

3. What expression must the center cell of the table below contain so that the sums of each row, each column, and each diagonal are equivalent?

$x+y$	$8x-y$	$-3x$
$-2x-y$		$6x+y$
$7x$	$-4x+y$	$3x-y$

A. x **B.** $2x$ **C.** $-x$ **D.** $-2x$ **E.** $4x$

---

*pr***ACT***ice* 33

1. A class of students is being arranged for a photo. When the class is arranged in rows of 6 students, one of the rows is one person short. When the class is arranged in rows of 7 students, one of the rows is still one person short. What is the least possible number of the students in the class?

A. 41 **B.** 42 **C.** 83 **D.** 125 **E.** 84

2. What is the distance in the standard (x,y) coordinate plane between the points $(2,3)$ and $(-1,-5)$?

A. $\sqrt{17}$ **B.** 3 **C.** 8 **D.** $\sqrt{11}$ **E.** $\sqrt{73}$

3. In the standard (x,y) coordinate plane, what is the y-coordinate of the midpoint on the line segment between the points $(-6,2)$ and $(3,-10)$?

A. $-\frac{3}{2}$ **B.** -4 **C.** -8 **D.** -6 **E.** 6

---

*pr***ACT***ice* 34

1. How many different positive four-digit integers can be created if the four digits 1, 3, 5, and 6 must be used to create each integer?

A. 6 **B.** 12 **C.** 48 **D.** 24 **E.** 18

2. For real numbers a and b, when is $|a+b|$ equal to $|a-b|$?

A. Only when $a=0$ or $b=0$. **B.** Only when $a>0$ or $b>0$.

C. Only when $a=b$. **D.** Always.

E. Never.

3. What is the slope of a line that is perpendicular to the line determined by the equation $8x - 2y = 5$?

A. -4 **B.** $-\frac{1}{4}$ **C.** 4 **D.** $\frac{1}{4}$ **E.** $-\frac{2}{5}$

---

*pr***ACT***ice* 35

1. $-|-21| - (-21) = ?$

A. 42 **B.** -42 **C.** 21 **D.** -21 **E.** 0

2. If $a = b + 2$, then $(b - a)^5 = ?$

A. 32 **B.** 16 **C.** -16 **D.** -32 **E.** -2

3. What is the fourth term in the arithmetic sequence $25, 18, 11, \ldots$?

A. 13 **B.** 3 **C.** 9 **D.** 4 **E.** 6

---

*pr***ACT***ice* 36

1. If a rectangle measures 21 centimeters by 28 centimeters, what is the length, in centimeters, of the diagonal of the rectangle?

A. 300 **B.** 30 **C.** 36 **D.** 35 **E.** 32

2. John owns 5 different pairs of shoes, 4 different pairs of pants, and 7 different shirts. How many distinct outfits, each consisting of a pair of shoes, a pair of pants, and a shirt, can John make?

A. 20 **B.** 120 **C.** 140 **D.** 28 **E.** 35

3. $3x^2 \times 7xy^3 \times 2x^5y^4$ is equivalent to:

A. $42x^8y^7$ **B.** $42x^{10}y^{12}$ **C.** $21x^8y^7$ **D.** $21x^{10}y^{12}$ **E.** $42y^8x^7$

---

*pr***ACT***ice* 37

1. The expression $x[3y - 2(z - w) - y]$ is equivalent to:

A. $2xy - 2xz + 2xw$ **B.** $3xy - 2xz - 2xw$

C. $3xy + 2xz - 2xw$ **D.** $2xy - 2z + 2w$

E. $2xy - 2x + z - w$

2. For what value of m would the following system of equations have an infinite number of solutions?

$$\begin{aligned} 5a-2b &= 8 \\ 15a-6b &= 6m \end{aligned}$$

A. 0 **B.** -4 **C.** -3 **D.** 3 **E.** 4

3. If $\tan\theta = -\frac{3}{4}$ and $\frac{\pi}{2} \leq \theta \leq \pi$, then $\sin\theta =$?

A. $-\frac{3}{5}$ **B.** $\frac{4}{5}$ **C.** $\frac{3}{5}$ **D.** $-\frac{4}{5}$ **E.** $\frac{3}{4}$

---

*pr***ACT***ice* 38

1. Which of the following is a solution to the equation $x^2 - 16x = 0$?

A. -16 **B.** 4 **C.** 16 **D.** -4 **E.** 32

2. For all positive integers a, b, and c, with $a \neq b$, which of the following expressions is equivalent to $\frac{a}{c}$?

A. $\frac{a-c}{b-c}$ **B.** $\frac{a+bc}{c+bc}$ **C.** $\frac{a-ab}{c-ab}$ **D.** $\frac{a \times b}{a \times c}$ **E.** $\frac{a^2-ab}{ac-bc}$

3. On the line segment AD shown below, points B and C lie in between A and D. The length of segment AD is 34 meters; the length of segment BD is 19 meters; and the length of segment AC is 23 meters. How many meters long is the segment BC?

A. 7 **B.** 8

C. 4 **D.** 11

E. Cannot be determined from the given information.

---

*pr***ACT***ice* 39

1. A rectangular swimming pool holds 5,120 cubic feet of water. If the swimming is 32 feet long and 20 feet wide and the pool is the same depth everywhere, how deep is the pool, in feet?

A. 6 **B.** 8 **C.** 7.5 **D.** 9 **E.** 6.5

2. If $x = \frac{1}{5}y^3z$, what is z in terms of x and y?

A. $\frac{1}{5}xy^3$ **B.** $-\frac{x}{5y^3}$ **C.** $\frac{x}{5y^3}$ **D.** $\frac{5x}{y^3}$ **E.** $5xy^3$

3. To keep up with rising costs, a plumber needs to increase his \$35.00 per hour rate by 15%. What will his new hourly rate be?

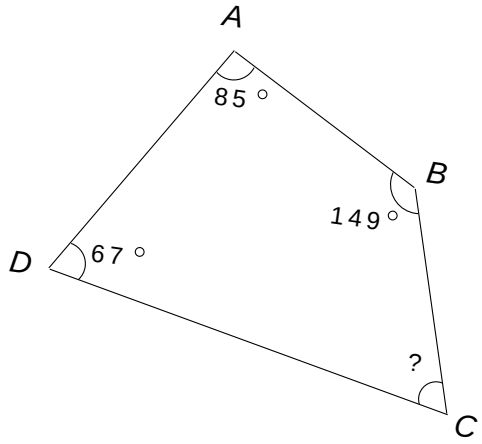
A. \$40.25 **B.** \$5.25 **C.** \$37.50 **D.** \$2.50 **E.** \$41.00

---

*pr***ACT***ice* 40

1. The figure below shows quadrilateral $ABCD$. What is the measure of $\angle C$?

A. 45°
B. 60°
C. 59°
D. 50°
E. 57°



2. An architect has the floor plan of a building drawn to scale. The floor plan of the building is a rectangle 6 inches by 9 inches. The architect wants to know the length of the shorter side of the building. If he knows that the length of the longer side of the building is 150 feet, how many feet long is the shorter side of the building?

A. 225 **B.** 120 **C.** 112.5 **D.** 100 **E.** 75

3. If 15 gallons of milk cost \$34.80, how much does one gallon of milk cost?

A. \$2.30 **B.** \$2.40

C. \$2.32 **D.** \$3.00

E. Cannot be determined from the given information.

*pr***ACT***ice* 41

1. The relationship between temperature in degrees Fahrenheit, F, and temperature in degrees Celsius, C, is given by the formula $F = \frac{9}{5}C + 32$. To the nearest degree, what is the equivalent temperature of 73° Fahrenheit on a Celsius thermometer?

A. 20° **B.** 21° **C.** 22° **D.** 23° **E.** 24°

2. The depth of a reservoir is 120 feet and is being reduced by $\frac{1}{2}$ ft. per week. The depth of a second reservoir is 130 ft. and is being reduced by 1 ft. per week. If the depth of both of these reservoirs continue to reduce at these constant rates, in about how many weeks will the reservoirs have the same depth?

A. 20 **B.** 7 **C.** 6 **D.** 10 **E.** 12

3. When $x - y = 4$, what is the value of $3(x-y)^2 + \frac{12}{x-y} - 7(x-y)$?

A. 21 **B.** 23 **C.** 28 **D.** 51 **E.** 13

---

*pr***ACT***ice* 42

1. When graphed in the standard (x, y) coordinate plane, which of the following equations does **NOT** represent a line?

A. $3x + 2y = 5$ **B.** $(x-3) + 2(y-1) = 7$ **C.** $y = -\frac{7}{5}x - 4$ **D.** $y = 5$

E. $y = \frac{3}{4}x^2 + 1$

2. What is the slope of any line perpendicular to the line $3x - 9y = 14$?

A. -3 **B.** $\frac{1}{3}$ **C.** $-\frac{1}{3}$ **D.** 3 **E.** -14

3. If 4 times a number n is added to 24, the result is negative. Which of the following gives the possible value(s) for n?

A. -28 only **B.** $n > -6$ **C.** -6 only **D.** $n < -6$

E. -10 only

---

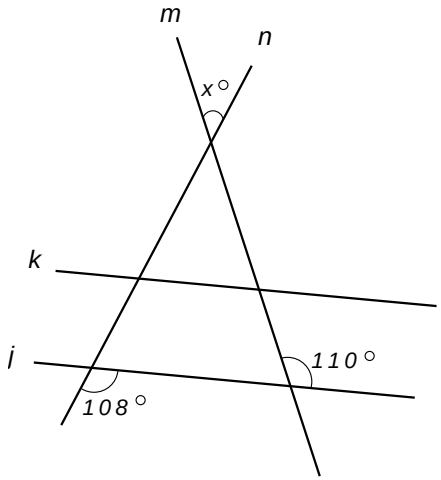
*pr***ACT***ice* 43

1. What is the y-intercept of the line in the standard (x, y) coordinate plane that passes through the points $(1, -2)$ and $(-2, 3)$?

A. $-\frac{1}{3}$ **B.** 0 **C.** 3 **D.** -1 **E.** $-\frac{5}{3}$

2. In the figure below, lines j and k are parallel, transversals m and n intersect to form an angle of measure x°, and two other angle measures are as marked. What is the value of x?

A. 70
B. 72
C. 20
D. 18
E. 38



3. If $f(x) = 2x^4 - 3x^2 + 1$ and $g(x) = \sqrt{x}$, what is the value of $(f \circ g)(2)$?

A. 1 **B.** 3 **C.** $2\sqrt{2}$ **D.** -2 **E.** $\sqrt{2}$

---

*pr***ACT***ice* 44

1. At the homecoming dance, one male and one female will be chosen as king and queen, respectively. If there are 200 females and 140 males, how many different 2-person combinations are possible for king and queen?

A. $2,800$ **B.** 200 **C.** 140 **D.** $28,000$ **E.** 340

2. $(x - \frac{1}{3}y)^2 = ?$

A. $x^2 - \frac{2}{3}xy + \frac{1}{9}y^2$ **B.** $x^2 - \frac{1}{9}y^2$ **C.** $x^2 + \frac{1}{9}y^2$ **D.** $x^2 - \frac{2}{3}xy - \frac{1}{9}y^2$

E. $x^2 + \frac{2}{3}xy + \frac{1}{9}y^2$

3. How many prime numbers are there between 1 and 20?

A. 9 **B.** 8 **C.** 7 **D.** 6 **E.** 5

*pr***ACT***ice* 45

1. If $\tan\theta < 0$, which of the following could be true about θ?

A. $\frac{\pi}{2} < \theta < \pi$ only.

B. $\frac{3\pi}{2} < \theta < 2\pi$ only.

C. Either $\frac{\pi}{2} < \theta < \pi$ or $\frac{3\pi}{2} < \theta < 2\pi$.

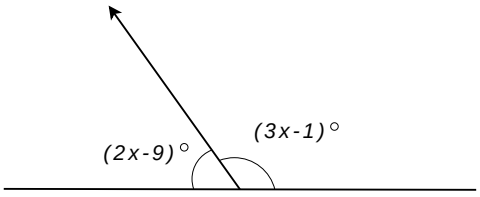
D. Either $0 < \theta < \frac{\pi}{2}$ or $\pi < \theta < \frac{3\pi}{2}$.

E. $\pi < \theta < \frac{3\pi}{2}$ only.

2. If $\log_a y = s$ and $\log_a x = t$, then $\log_a \left(\frac{y}{x}\right) = ?$

A. $s - t$ **B.** $\frac{s}{t}$ **C.** $t - s$ **D.** $\frac{t}{s}$ **E.** $a^{s/t}$

3. What is the degree measure of the larger of the two angles formed by the line and the ray in the figure below?



A. 114 **B.** 130 **C.** 67 **D.** 38 **E.** 113

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*pr***ACT***ice* 46

1. The cost of a hotdog and a soft drink at a baseball game is \$3.20. The cost of two hotdogs and a soft drink is \$4.40. What is the cost of a soft drink?

A. \$1.20 **B.** \$2.00 **C.** \$0.40 **D.** \$2.80 **E.** \$2.50

2. A triangle with perimeter 96 centimeters has one side that is 26 centimeters long. The lengths of the other two sides have a ratio of $3:4$. What is the length, in centimeters, of the *longest* side of the triangle?

A. 30 **B.** 26 **C.** 45 **D.** 42 **E.** 40

3. If $6x = -3(2x - 12)$, then $x = ?$

A. 2 **B.** 3 **C.** 4 **D.** 5 **E.** 6

*pr***ACT***ice* 47

1. Which of the following sets of 3 numbers could be the side lengths, in inches, of a 30°, 60°, 90° triangle?

A. $1, \sqrt{2}, 1$ **B.** $2\sqrt{3}, 4, 2$ **C.** $1, 2, 3$ **D.** $2\sqrt{2}, 2\sqrt{2}, 2$

E. $1, \sqrt{3}, \sqrt{2}$

2. $(x^2 - 2x - 7) - (3x^2 - 2x + 4)$ is equivalent to:

A. $-2x^2 - 11$ **B.** $-2x^2 - 4x - 11$ **C.** $-2x^2 - 3$ **D.** $-2x^2 - 4x - 3$

E. $2x^2 + 3$

3. The normal amount of chlorine in a certain swimming pool is 1.3×10^{-4} milligrams per liter. When the chlorine level in the water was tested today, it was found to have exactly 100 times more than the normal level of chlorine. What concentration of chlorine, in milligrams per liter, is in the swimming pool today?

A. 13×10^{-2} **B.** 1.3×10^{-2} **C.** 1.3×10^{-6} **D.** 1.3

E. 1.3×10^{-1}

---

*pr***ACT***ice* 48

1. Which of the following equations expresses a in terms of b, for all real numbers a, b, and c such that $a^2 = c^3$ and $c = b^4$

A. $a^2 = b^7$ **B.** $b = a^6$ **C.** $a^2 = b^4$ **D.** $b^8 = a^3$ **E.** $b^{12} = a^2$

2. Which of the following statements is **NOT** true about the arithmetic sequence $23, 19, 15, 11, \ldots$?

A. The fifth term is 7.

B. The sum of the first 7 terms is 77.

C. The common difference of consecutive terms is -4.

D. The common ratio of consecutive terms is -4.

E. The first term minus 44 is the twelfth term.

3. What is the matrix product $\begin{bmatrix} b \\ 4b \\ 3b \end{bmatrix} \begin{bmatrix} 2 & 0 & -1 \end{bmatrix}$?

A. $\begin{bmatrix} 2b & 0 & -b \\ 8b & 0 & -4b \\ 6b & 0 & -3b \end{bmatrix}$ **B.** $\begin{bmatrix} 2b & 8b & 6b \\ 0 & 0 & 0 \\ -b & -4b & -3b \end{bmatrix}$

C. $\begin{bmatrix} 2b & 0 & -3b \end{bmatrix}$ **D.** $[-b]$

E. $\begin{bmatrix} 2b \\ 0 \\ -3b \end{bmatrix}$

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*pr***ACT***ice* 49

1. Lisa plays basketball and her shooting accuracy increased by 10% from 2001 to 2002, and by 30% from 2002 to 2003. By what percent did her shooting accuracy increase from 2001 to 2003?

A. 40% **B.** 30% **C.** 35% **D.** 43% **E.** 20%

2. Which of the following quadratic equations has solutions $x = 2a$ and $x = -5b$?

A. $x^2 - 10ab = 0$ **B.** $x^2 + x(2a - 5b) - 10ab = 0$

C. $x^2 + x(5b - 2a) - 10ab = 0$ **D.** $x^2 - x(2a - 5b) + 10ab = 0$

E. $x^2 + x(2a - 5b) + 10ab = 0$

3. Which of the following lists gives 2 of the 3 interior angle measurements of a triangle for which the third angle measurement would be equal to the smaller of the two given measurements.

A. 100°, 40° **B.** 90°, 30° **C.** 120°, 40° **D.** 85°, 45°

E. 70°, 50°

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*pr***ACT***ice* 50

1. Which of the following is a value for b that satisfies $\log_b 81 = 4$?

A. 3 **B.** $\frac{1}{3}$ **C.** 4 **D.** $\frac{81}{4}$ **E.** $\frac{4}{81}$

2. In triangle ABC, the measure of angle A is 30° and the measure of angle B is 60°. If side AB is 16 units long, what is the area, in square units, of triangle ABC?

A. 64 **B.** $32\sqrt{3}$ **C.** 32 **D.** $16\sqrt{3}$ **E.** $8\sqrt{3}$

3. What is the slope of any line parallel to the y-axis in the standard (x,y) coordinate plane?

A. 0 **B.** 1

C. Undefined **D.** -1

E. Cannot be determined from the given information.

---

*pr***ACT***ice* 51

1. Janice can run 4 miles in x minutes. At that rate, in how many minutes can she run 10 miles?

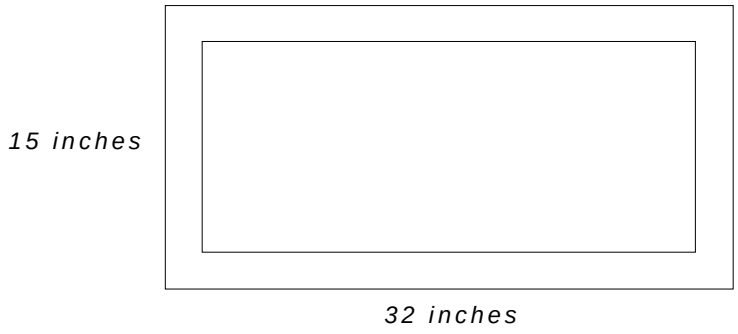
A. $2.5x$ **B.** $.4x$ **C.** $4x$ **D.** $10x$ **E.** $40x$

2. Which one of the following lines has the smallest slope?

A. $2y = 3x - 4$ **B.** $9y - 2x = 15$ **C.** $5y = 4 + 3x$ **D.** $x - y = 1$

E. $y = \frac{1}{2}x$

3. The photograph frame below has a uniform frame-width of 1.5 inches. What is the the approximate area, in square inches, of the viewable portion of the photograph?



A. 457.5 **B.** 480 **C.** 432 **D.** 411.75 **E.** 552.75

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*pr***ACT***ice* 52

1. Which of the following expresses the number of miles a person must travel when walking 6 laps around a circular path of radius n at a certain park?

A. $3\pi n$ **B.** $6n$ **C.** $6\pi n$ **D.** $6\pi n^2$ **E.** $12\pi n$

2. A rectangular room is 6 feet longer than 2 times its width. The area, in square feet, of the room is 260. How long, in feet, is the room?

A. 10 **B.** 13 **C.** 32 **D.** 15 **E.** 26

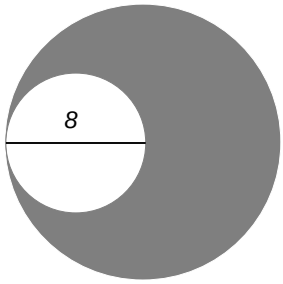
3. A triangle, $\triangle ABC$, is reflected across the line $y = x$ in the standard (x, y) coordinate plane to the triangle $\triangle A'B'C'$. In particular, the point A gets reflected to a point A', the point B gets reflected to the point B' and the point C gets reflected to the point C'. If the coordinates of point B are (r, s), what are the coordinates of point B'?

A. $(-r, -s)$ **B.** $(s, -r)$ **C.** $(-s, r)$ **D.** $(r, -s)$ **E.** (s, r)

---

*pr***ACT***ice* 53

1. The diagram below shows two tangent circles such that the 8-inch diameter of the smaller circle is equal to the radius of the larger circle. What is the area, in square inches, of the shaded region?



A. 16π **B.** 32π **C.** 64π **D.** 48π **E.** 24π

2. If $2^{(x+1)} = 4^{(x-1)}$, what is x?

A. 2 **B.** 1 **C.** 4 **D.** 3 **E.** 0

3. What is the least common denominator when adding the fractions $\frac{c}{4}$, $\frac{a}{2}$, $\frac{d}{3}$, and $\frac{b}{15}$?

A. 360 **B.** 180 **C.** 60 **D.** 120 **E.** 30

---

*pr***ACT***ice* 54

1. Traveling at approximately 186,000 miles per second, about how many miles does a beam of light travel in 3 hours?

A. 3.35×10^7 **B.** 6.7×10^8 **C.** 2.01×10^9 **D.** 4.02×10^{10}

E. 1.21×10^{11}

2. If $\sin A = \dfrac{b}{c}$, $b > 0$, $c > 0$, and $0 < A < \dfrac{\pi}{2}$, then what is $\tan A$?

A. $\dfrac{b}{\sqrt{c^2 - b^2}}$ **B.** $\dfrac{c}{b}$ **C.** $\dfrac{\sqrt{c^2 - b^2}}{b}$ **D.** $\dfrac{c}{\sqrt{c^2 - b^2}}$

E. $\dfrac{c}{\sqrt{c^2 + b^2}}$

3. The ratio of x to y is 3 to 5, and the ratio of y to z is 1 to 2. What is the ratio of x to z?

A. 6 to 5 **B.** 3 to 10 **C.** 2 to 5 **D.** 5 to 6 **E.** 1 to 5

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*pr***ACT***ice* 55

1. If $(x - 3)$ is a factor of $2x^2 - x - k$, what is the value of k?

A. -15 **B.** 15 **C.** 9 **D.** -9 **E.** 5

2. Consider the three statements below to be true.

All reptiles that live in the desert are lizards.
Reptile R is a lizard.
Reptile S lives in the desert.

Which one of the following statements is necessarily true?

A. Reptile R lives in the desert.
B. Reptile R does not live in the desert.
C. Reptile S is not a lizard.
D. Reptile S is a lizard.
E. Reptile S is a not lizard that lives in the desert.

3. What is the value of the expression $k^2 \cdot (3k - 2)^3$ for $k = 2$?

A. 128 **B.** 64 **C.** 32 **D.** 256 **E.** 512

*pr***ACT***ice* 56

1. Bernie earned 82, 91, 83, and 95 out of 100 points on the first 4 tests in his math class. How much must he earn on his fifth test, also worth 100 points so that his average for the 5 tests is 90?

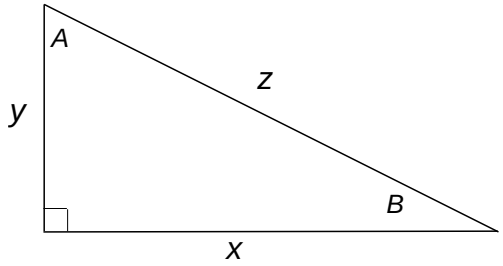
A. 100 **B.** 95 **C.** 97 **D.** 90 **E.** 99

2. In the right triangle shown below, the sides are measured in centimeters. For any such triangle, $(\tan A)(\cos B)$ is equivalent to:

A. $\frac{yz}{x}$ **B.** $\frac{x^2}{yz}$

C. $\frac{x}{z}$ **D.** $\frac{y}{z}$

E. $\frac{xy}{z^2}$



3. For all $z > 0$, $\frac{2}{z} - \frac{5}{3} =$?

A. $\frac{1}{3z}$ **B.** $\frac{-3}{z-3}$ **C.** $\frac{10}{5z-6}$ **D.** $\frac{6-5z}{3z}$ **E.** $\frac{6}{z-3}$

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*pr***ACT***ice* 57

1. If $\cos\theta = \frac{7}{8}$ and $\sin\theta = \frac{2}{3}$, then $\tan\theta =$?

A. $\frac{7}{12}$ **B.** $\frac{16}{21}$ **C.** $\frac{3}{2}$ **D.** $\frac{21}{16}$ **E.** $\frac{2}{3}$

2. In the (x,y) coordinate plane, what is the x-intercept of the line $2x+7y=5$?

A. 2 **B.** $-\frac{2}{7}$ **C.** 5 **D.** $\frac{5}{7}$ **E.** 2.5

3. If $\frac{(m^x)^3}{m^y} = m^7$, for all $m \neq 0$, which of the following must be true?

A. $3xy = 7$ **B.** $\frac{3x}{y} = 7$ **C.** $3x - y = 7$ **D.** $\sqrt[3]{3xy} = 7$

E. $3x + y = 7$

*pr***ACT***ice* 58

1. Which of the following calculations yields an odd integer for any integer n?

A. $2(n-1)+5$ **B.** $2n-4$ **C.** $6(n-3)+2$ **D.** $4n-6$

E. $2(n+5)+6$

2. A certain isosceles triangle has legs that are each twice as long as its base. Suppose the length of each side of the triangle is tripled to get a second triangle. The perimeter of the second triangle is how many times as large as the perimeter of the first triangle?

A. 6 **B.** 27 **C.** 9 **D.** $\frac{9}{5}$ **E.** 3

3. What is the slope of any line perpendicular to the y-axis in the standard (x,y) coordinate plane?

A. Undefined. **B.** 1

C. 0 **D.** -1

E. Cannot be determined from the given information.

---

*pr***ACT***ice* 59

1. For some real number k, the graph of the line $y=(2k-1)x+4$ passes through the point $(1,7)$. What is the value of k?

A. 0 **B.** 2 **C.** $\frac{3}{2}$ **D.** $\frac{5}{2}$ **E.** 4

2. What is the equation of the circle in the standard (x,y) coordinate plane that has a radius of 9 units and the same center as the circle determined by $x^3-6x+y^2=7$

A. $x^2-(y+6)^2=9$ **B.** $(x-3)^2+y^2=9$

C. $(x+3)^2+y^2=81$ **D.** $(x-3)^2+y^2=81$

E. $(x-3)^2+y^2=9$

3. If $\log_3(5x+2)=3$, then $x=$?

A. 5 **B.** 3 **C.** 0 **D.** $-\frac{1}{5}$ **E.** $\frac{1}{3}$

*pr***ACT***ice* 60

1. In the standard (x,y) coordinate plane, if a square has the vertices $(-2,1)$, $(-1,2)$ and $(0,1)$, what are the coordinates of the fourth vertex?

A. $(1,-2)$ **B.** $(0,1)$ **C.** $(-1,1)$ **D.** $(-1,0)$ **E.** $(0,0)$

2. If $x^2 = 64$ and $y^2 = 1$, which of the following **CANNOT** be the value of $x+y$?

A. 9 **B.** 8 **C.** 7 **D.** -7 **E.** -9

3. Jack, Will, and Charles are all brothers, and their father would like them to wash his car. It normally takes Jack 2 hours to wash the car, it takes Will 1.5 hours to wash the car, and it only takes Charles half an hour to wash the car. About how many minutes will it take them to wash the car it they all work together?

A. 16 **B.** 15 **C.** 26 **D.** 19 **E.** 22

---

*pr***ACT***ice* 61

1. Which of the following is the least common denominator for the expression below?

$$\frac{2}{b^3 \times c^3} + \frac{5}{a \times b^2 \times c^5} - \frac{1}{a^3 \times b}$$

A. $a \times b \times c$ **B.** $a \times b^2 \times c^3$ **C.** $a^2 \times b^2 \times c^2$ **D.** $a^4 \times b^6 \times c^8$

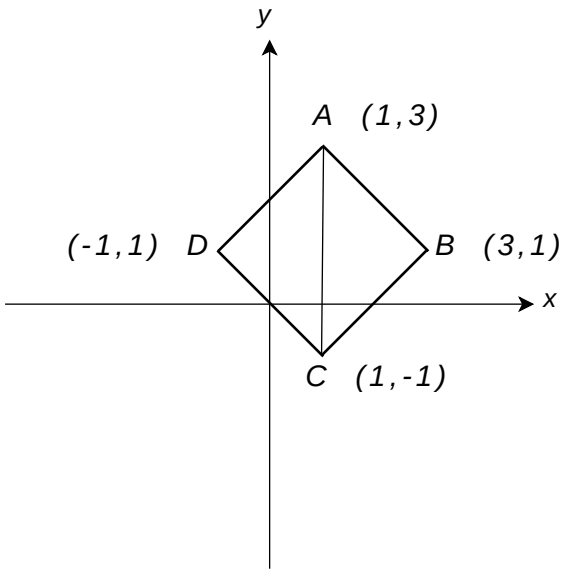
E. $a^3 \times b^3 \times c^5$

2. What number can you add to the numerator and the denominator of $\frac{7}{13}$ to get $\frac{1}{4}$?

A. -7 **B.** 2 **C.** -5 **D.** -1 **E.** 1

3. Given the vertices of the square *ABCD*, in the standard (x,y) coordinate plane below, what is the area of triangle *ABC*, in square units?

A. $2\sqrt{2}$
B. 8
C. 2
D. 4
E. $4\sqrt{2}$



*pr***ACT***ice* 62

1. If a and b are non-zero real numbers with $a = b$, then which of the following conditions must be true?

A. $\dfrac{a-b}{a+b} = 0$ **B.** $\dfrac{a^2-ab}{a-b} = a$ **C.** $\dfrac{a-b}{b-a} = -1$ **D.** $\dfrac{a-b}{a-b} = 1$

E. $\dfrac{a}{b-a} = \dfrac{a}{b} - 1$

2. The average of a set of four integers is 50. When a fifth integer is included in the set, the average of the set increases to 51. What is the fifth integer?

A. 53 **B.** 54 **C.** 51 **D.** 52 **E.** 55

3. If $x \cdot y \cdot z \cdot w = 27$ and $x \cdot z \cdot v \cdot w = 0$, then which of the following must be true?

A. $y = 0$ **B.** $w = 0$ **C.** $x > 0$ **D.** $z > 0$ **E.** $w < 0$

---

*pr***ACT***ice* 63

1. In the standard (x,y) coordinate plane, what is the y-intercept for the graph of the parabola $y = 3x^2 - 2x + 5$?

A. 3 **B.** -2 **C.** $\dfrac{19}{3}$ **D.** 5 **E.** $\dfrac{2}{3}$

2. What is the smallest possible value for the product of two numbers that differ by 4?

A. 4 **B.** 2 **C.** -4 **D.** -2 **E.** -8

3. If $f(x) = 3x^2 - x$, then $f(x+h) =$?

A. $3x^2 - x + h$ **B.** $3x^2 + 6xh - x + 3h^2 - h$

C. $3x^2 - x - h$ **D.** $3(x+h)^2 - x + h$

E. $3(x+h)^2 - x$

---

*pr***ACT***ice* 64

1. In a game, 95 pieces of paper numbered 00 through 94 are placed in a bag. A player draws one piece of paper at random from the bag. Without replacing the first piece of paper, the player then draws a second piece of paper from the bag. If both pieces of paper have the same tens digit (that is both pieces of paper are numbered between 00 and 09, or 10 and 19, or 20 and 29, etc.), the player is a winner. If the first piece of paper Shana draws from the bag is numbered 73, what is the probability that Shana will be a winner on the next draw?

A. $\dfrac{9}{95}$ **B.** $\dfrac{85}{94}$ **C.** $\dfrac{9}{94}$ **D.** $\dfrac{85}{95}$ **E.** $\dfrac{10}{94}$

2. Which real number x satisfies $(2^x)^3 \cdot 16 = 8^3$?

A. 4 **B.** 3 **C.** $\frac{2}{3}$ **D.** 2 **E.** $\frac{5}{3}$

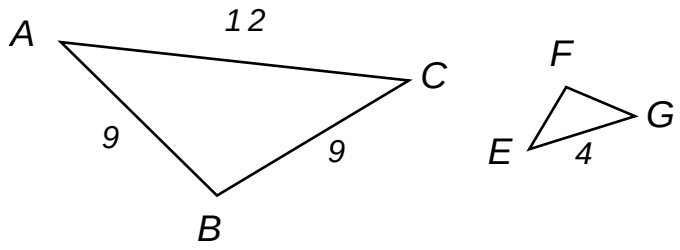
3. Mike and Anna own a diner that serves sandwiches. They have in stock, 6 different kinds of meat, 5 kinds of cheese, 7 kinds of vegetables, and 4 kinds of condiments. Each sandwich on the menu has exactly one kind of meat, one kind of cheese, one kind of vegetable, and one condiment. How many different types of sandwiches are possible to have on the menu?

A. 840 **B.** 22 **C.** 210 **D.** 420 **E.** 155

---

*pr***ACT***ice* 65

1. In the figure below, $\triangle ABC$ and $\triangle EFG$ are similar, with the given side lengths in feet. What is the perimeter, in feet, of $\triangle EFG$?



A. 9 **B.** 10 **C.** 11 **D.** 8 **E.** 7

2. Natalie would like to build a box with dimensions 4 meters by 4 meters by 4 meters. What is the least amount of material, in square meters, that Natalie will need in order to build the box (assuming that the material has no thickness)?

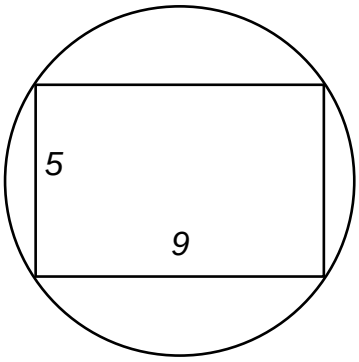
A. 64 **B.** 96 **C.** 12 **D.** 20 **E.** 72

3. A perfectly vertical tree 40 feet tall, casts a shadow on level ground that is 40 feet long. What is the angle of elevation from the tip of the shadow to the top of the tree?

A. 60° **B.** 33° **C.** 30° **D.** 90° **E.** 45°

*pr***ACT***ice 66*

1. A 5-meter by 9-meter rectangle is inscribed in a circle as shown below. What is the area of the circle, in square meters?



A. 81π **B.** $2\pi\sqrt{106}$ **C.** $\frac{53\pi}{2}$ **D.** 25π **E.** 20.25π

2. For all y, $(3y+y^2)^2 =$?

A. $y^4+6y^3+9y^2$ **B.** $9y^2+y^4$ **C.** $6y^2+y^4$ **D.** $y^4+9y^2+3y^3$

E. $3y+y^2$

3. On the real number line, what is the midpoint of -9 and 19?

A. 5 **B.** 10 **C.** 14 **D.** 8 **E.** 12

---

*pr***ACT***ice 67*

1. A system of linear equations is shown below.

$$\begin{aligned} 5y &= 3x-2 \\ 3y &= 5x-2 \end{aligned}$$

Which of the following describes the graph of this system of linear equations in the standard (x,y) coordinate plane?

A. Two distinct intersecting lines.

B. Two parallel lines with positive slopes.

C. Two perpendicular lines.

D. A single line with positive slope.

E. Two parallel lines with negative slopes.

2. A certain type of candy bar costs \$0.75 before sales tax is added. When you buy 10 of these candy bars, you receive 5 additional candy bars free. What is the average cost per candy bar for the 15 candy bars before sales tax is added?

A. \$0.65 **B.** \$0.50 **C.** \$0.70 **D.** \$0.35 **E.** \$0.45

3. Which of the following is a value of x that satisfies $\log_x 64 = 3$?

A. 2 **B.** 3 **C.** 4 **D.** 64 **E.** 8

---

*pr***ACT***ice* 68

1. By definition, the determinant $\begin{vmatrix} a & b \\ c & d \end{vmatrix}$ equals $ad - bc$. What is the value of the determinant $\begin{vmatrix} 2x & -y \\ 3xy & -4x \end{vmatrix}$ when $x = -1$ and $y = -2$?

A. 0 **B.** -4 **C.** 4 **D.** -8 **E.** -20

2. The solution set of $\sqrt{3-2x} > 4$ is the set of all real numbers x such that:

A. $x > \frac{1}{2}$ **B.** $x > -\frac{13}{2}$ **C.** $x < \frac{1}{2}$ **D.** $x < -\frac{13}{2}$ **E.** $x < -\frac{-19}{2}$

3. The measure of a certain angle in a regular polygon is 132 degrees. What is the measure of the angle in radians?

A. 132π **B.** $\frac{22\pi}{15}$ **C.** $\frac{11\pi}{15}$ **D.** $\frac{15\pi}{11}$ **E.** $\frac{15\pi}{22}$

---

*pr***ACT***ice* 69

1. What is the midpoint of the line segment from the point $(-5, 10)$ to the point $(-7, -8)$ in the standard (x, y) coordinate plane?

A. $(1, 1)$ **B.** $(-6, 1)$ **C.** $(-1, 1)$ **D.** $(1, 9)$ **E.** $(-12, 2)$

2. Which of the following statements is **NOT** true about the geometric sequence $405, 135, 45, \ldots$?

A. The fifth term is 5.

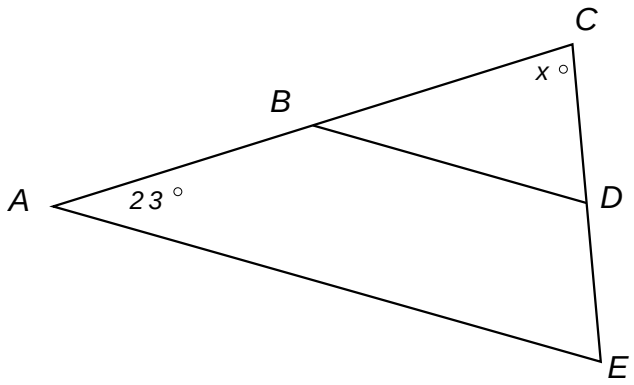
B. The product of the fourth and fifth terms is 75.

C. The common ratio of consecutive terms is 3 : 1.

D. Every term in the sequence is evenly divisible by 5.

E. Each consecutive term is $\frac{1}{3}$ of the previous term.

3. In the diagram below, $\overline{BD}$ is parallel to $\overline{AE}$, $\triangle ACE$ and $\triangle BCD$ are similar, $m\angle A = 23^\circ$, and $m\angle C = x^\circ$. What is **NOT** a possible measure for $\angle CDB$, if $75^\circ < x < 90^\circ$?



A. 75° **B.** 70° **C.** 83° **D.** 81° **E.** 68°

---

*pr***ACT***ice* 70

1. A wheel 24 inches in diameter rolls along a line. How many inches does the wheel roll along the line in 15 revolutions?

A. 360π **B.** 180π **C.** 2160π **D.** 24π **E.** 15π

2. For all $x > 3$, $\dfrac{2x^2-5x-3}{2x^2-6x} = ?$

A. 1 **B.** x^2-2x-3 **C.** $\dfrac{2x+1}{2x}$ **D.** $\dfrac{x+1}{x}$ **E.** $\dfrac{1}{2x}$

3. You have enough material to build a fence 608 meters long. If you use it all to enclose a square region, how many square meters will you enclose?

A. $369,664$ **B.** $2,432$ **C.** $92,416$ **D.** $23,104$ **E.** $5,776$

---

*pr***ACT***ice* 71

1. Store A sells 50 pencils for \$14.00, while store B sells 48 pencils for \$12.00. Which store's price per pencil is cheaper, and what is that price?

A. Store A, at \$0.28 **B.** Store B, at \$0.27

C. Store A, at \$0.26 **D.** Store B, at \$0.25

E. Store B, at \$0.24

2. What is the value of x that satisfies the equation $5(2x-1) = 3x-4$?

A. $-\dfrac{9}{7}$ **B.** $\dfrac{1}{7}$ **C.** $\dfrac{1}{13}$ **D.** $-\dfrac{9}{13}$ **E.** $\dfrac{3}{7}$

3. Jared has two glasses of water, one having twice the capacity of the other. He notices that the larger glass is about $\frac{1}{3}$ full, and the smaller glass is about $\frac{2}{3}$ full. Jared pours all of the water from the smaller glass into the larger glass. Then, about how full is the larger glass?

A. $\frac{5}{6}$ full **B.** $\frac{2}{3}$ full **C.** $\frac{1}{2}$ full **D.** Completely full

E. Overflowing

---

*pr***ACT***ice* 72

1. A line contains the points A, B, C, and D. Point D is between A and C, and point B is between D and A. Which of the following inequalities must be true about the lengths of these segments?

A. $\overline{AB} < \overline{DC}$ **B.** $\overline{AC} > \overline{BD}$ **C.** $\overline{AD} > \overline{BC}$ **D.** $\overline{AB} > \overline{BD}$

E. $\overline{AD} < \overline{BD}$

2. Which of the following inequalities defines the solution set for the linear inequality $15 - 4x \leq 20$?

A. $x \leq -\frac{5}{4}$ **B.** $x \leq \frac{5}{4}$ **C.** $x \geq \frac{5}{4}$ **D.** $x \leq -\frac{15}{4}$ **E.** $x \geq -\frac{5}{4}$

3. Which of the following expressions is equivalent to $\left(\frac{(x^2y^3)^2}{2xy}\right)^3$?

A. $\frac{1}{8}x^9y^{12}$ **B.** $\frac{1}{6}x^9y^{12}$ **C.** $\frac{1}{8}x^7y^8$ **D.** $\frac{1}{8}x^9y^{15}$ **E.** $\frac{1}{6}x^7y^{12}$

---

*pr***ACT***ice* 73

1. If $\frac{a}{b} = 7$ and $a + b = 12$, then $ab =$?

A. $\frac{63}{4}$ **B.** $\frac{21}{2}$ **C.** $\frac{63}{2}$ **D.** 20 **E.** $\frac{9}{4}$

2. How many minutes would it take an airplane to travel 300 miles at a constant speed of 500 miles per hour?

A. 33 **B.** 34 **C.** 35 **D.** 36 **E.** 37

3. When $b = 5$, then which of the following is equivalent to y^6?

A. $(y^{b+3})^{-2}$ **B.** $(y^{2-b})^2$ **C.** $(y^b)^{1/3}$ **D.** $(y^{b-2})^2$ **E.** $(y^{b-2})^3$

*pr***ACT***ice* 74

1. For the complex number i such that $i^2 = -1$, what is the value of $-4i^7 - 3i^2$?

A. -1 **B.** 1 **C.** $-4i+3$ **D.** 7 **E.** $4i+3$

2. Which inequality represents the values of x satisfying $|2x-5| \leq 3$?

A. $1 \leq x \leq 4$ **B.** $x \leq 4$ **C.** $-2 \leq x \leq 1$ **D.** $x \geq 4$

E. $-4 \leq x \leq 1$

3. What is the area, in square feet, of a right triangle with sides 9 feet, 12 feet, and 15 feet?

A. 90 **B.** 54 **C.** $\dfrac{135}{2}$ **D.** 108 **E.** 180

---

*pr***ACT***ice* 75

1. If a and b are real and $\dfrac{x^4+1}{y^5} = -3$, then what must be true of the value of y?

A. y may have any value. **B.** y must be prime.

C. y must be positive. **D.** y must be negative.

E. y must be greater than -3.

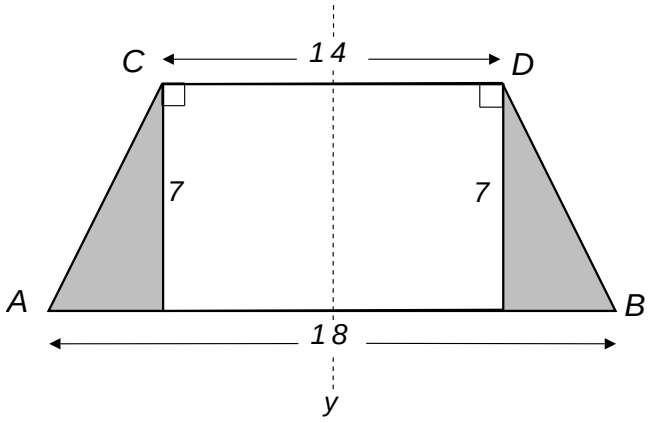
2. Which of the following lines is parallel to $y = -\dfrac{3}{4}x - 2$?

A. $3y - 4x + 1 = 7$ **B.** $3y + 4x = 2$

C. $8y + 6x - 5 = 0$ **D.** $y = \dfrac{4}{3}x - 2$

E. $y = x + 2$

3. The figure below has side lengths, in meters, as shown. The line y is a perpendicular bisector of lines AB and CD. What is the total area, in square meters, of the shaded region?



A. 98 **B.** 46 **C.** 32 **D.** 28 **E.** 14

---

*pr***ACT***ice 76*

1. A certain triangle has a height equal to 3 times its base. Suppose the height and the base are both doubled. The area of the second triangle is how many times as large as the area of the first?

A. 2 **B.** 4 **C.** 5 **D.** 6 **E.** $\frac{1}{2}$

2. If $\frac{1}{y} = \frac{1}{x+2}$ and $2x-3y=6$, then $x=$?

A. -12 **B.** -10 **C.** -8 **D.** -4 **E.** 0

3. The least integer in a set of consecutive integers is -25. If the sum of these integers is 26, how many integers are in the set?

A. 50 **B.** 51 **C.** 52 **D.** 53 **E.** 54

---

*pr***ACT***ice 77*

1. If $\tan\beta = \frac{3}{5}$ and $\sin\beta = \frac{12}{25}$, then what is $\cos\beta$?

A. $\frac{4}{5}$ **B.** $\frac{3}{4}$ **C.** $\frac{5}{6}$ **D.** $\frac{2}{3}$ **E.** $\frac{2}{5}$

2. In a class of 120 students, 60% are girls. Fifty-three of the girls received a passing grade on the last exam. And 75% of the boys received a passing grade on the last exam. How many students in the class received a passing grade on the last exam?

A. 65 **B.** 89 **C.** 96 **D.** 98 **E.** 112

3. The volume of a pyramid with a square base is calculated using the following formula: $\frac{1}{3}$(length of base)(width of base)(height). The square base of a pyramid has an area of 144 square inches. If the height of the pyramid is 72 inches, what is the volume, in cubic inches, of the pyramid?

A. $3,456$ **B.** $10,368$ **C.** 864 **D.** $5,184$ **E.** $1,728$

---

*pr***ACT***ice* 78

1. There are 15 colored socks in a drawer. Five of the socks are white, 4 are brown, and 6 are black. If Brandon picks a white sock out of the drawer, and without replacing it, picks another sock out of the drawer at random, what is Brandon's chance of picking another white sock out of the drawer?

A. $\frac{4}{15}$ **B.** $\frac{5}{14}$ **C.** $\frac{1}{4}$ **D.** $\frac{1}{5}$ **E.** $\frac{2}{7}$

2. Line a has equation $y = 3x$. In the standard (x,y) coordinate plane, line b is perpendicular to line a and meets line a at the point $(-1,-3)$. What is the equation of line b?

A. $y = \frac{1}{3}x - 3$ **B.** $y = -3x - 6$ **C.** $y + 3x = -10$ **D.** $3y + x = -10$

E. $3y - x = 10$

3. Which of the following expresses the n^{th} term of the following geometric sequence?

$$2, 12, 72, 432, \ldots$$

A. $n \cdot (2 \cdot 6)$ **B.** $2^n \cdot 6$ **C.** $2n + 6$ **D.** $2 \cdot 6^{(n-1)}$ **E.** $n(2+6)$

---

*pr***ACT***ice* 79

1. In the standard (x,y) coordinate plane, triangle ABC has vertices $(-2,3)$, $(4,3)$, and $(4,-1)$. What is the area, in square units, of triangle ABC?

A. 8 **B.** 9 **C.** 10 **D.** 11 **E.** 12

2. If $5a^7b^6 \leq 0$, then which of the following must be true?

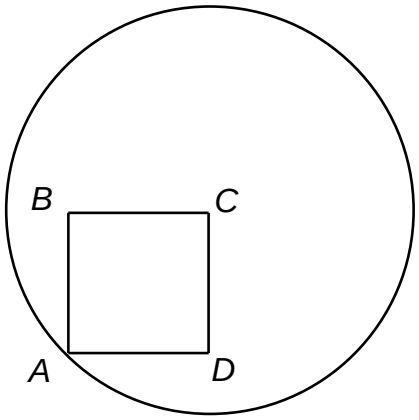
A. $b \geq 0$ **B.** $a < b$ **C.** $b \leq 0$ **D.** $a \leq 0$ **E.** $a \geq 0$

3. The figure below shows square *ABCD* and also shows the circle centered at *C*, with radius *AC*. If the radius of the circle is 5 inches, what is the area of the square, in square inches?

A. 50 **B.** $\frac{5\sqrt{2}}{2}$

C. $\frac{25}{2}$ **D.** $5\sqrt{2}$

E. $10\sqrt{2}$



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*pr***ACT***ice* 80

1. For any integer x, which of the following calculations will always yield an even integer?

A. $(2x-6)^3$ **B.** x^3+1 **C.** x^4+2 **D.** x^3+2 **E.** $|x^4|+4$

2. $\left(\frac{2}{3}x-\frac{1}{4}y\right)^2 = ?$

A. $\frac{4}{9}x^2-\frac{1}{16}y^2$ **B.** $\frac{4}{9}x^2+\frac{1}{16}y^2$

C. $\frac{4}{9}x^2-\frac{1}{3}xy+\frac{1}{16}y^2$ **D.** $\frac{4}{9}x^2-\frac{1}{6}xy+\frac{1}{16}y^2$

E. $\frac{4}{6}x^2-\frac{1}{6}xy+\frac{1}{8}y^2$

3. In a right triangle *PQR*, the hypotenuse, *PR*, has a length of 25 units, and leg *PQ* has a length of 20 units. What is the perimeter of triangle *PQR*?

A. 75 **B.** 55 **C.** 90 **D.** 45 **E.** 60

*pr***ACT***ice* 81

1. What is the matrix product $\begin{bmatrix} 2 & -1 \\ 1 & 0 \end{bmatrix} \cdot \begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix}$?

A. $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$ **B.** $\begin{bmatrix} 1 & -1 \\ 1 & -1 \end{bmatrix}$ **C.** $\begin{bmatrix} -1 & 1 \\ -1 & 0 \end{bmatrix}$ **D.** $\begin{bmatrix} 1 & -1 \\ 1 & 0 \end{bmatrix}$

E. $\begin{bmatrix} 1 & -1 \\ -1 & 0 \end{bmatrix}$

2. Which value of x satisfies the equation $\log_4 2^x = x - 1$?

A. 2 **B.** 3 **C.** 4 **D.** -1 **E.** -2

3. What is the least common multiple of 28 and 70?

A. 210 **B.** 140 **C.** 1960 **D.** 214 **E.** 980

---

*pr***ACT***ice* 82

1. Which value(s) for x satisfy the equality $|2x-3| = 5-x$?

A. $\frac{8}{3}$ only. **B.** -2 only. **C.** 3 and 5. **D.** -3 and 5.

E. -2 and $\frac{8}{3}$.

2. Simplified completely, $\sqrt[3]{864} = ?$

A. $6\sqrt[3]{6}$ **B.** $216\sqrt[3]{6}$ **C.** 36 **D.** $6\sqrt[3]{36}$ **E.** $12\sqrt[3]{6}$

3. Angie is enclosing a rectangular garden measuring 6 feet by 13 feet. One of the 13-ft. sides of the garden must be enclosed by a brick wall, which costs \$45 per ft., while the other sides will be enclosed by a chain-link fence, costing \$25 per ft. How much will it cost to enclose the garden?

A. \$810 **B.** \$950 **C.** \$1,050 **D.** \$1,210 **E.** \$1,710

---

*pr***ACT***ice* 83

1. Amber has an empty container in which she puts 8 red marbles. She wants to put in enough green marbles so that the probability of drawing a red marble at random from the container is $\frac{2}{3}$. How many green marbles should she put in the container?

A. 2 **B.** 3 **C.** 4 **D.** 6 **E.** 12

2. For any real number b, suppose $|x-2b|=7$. On a number line, how far apart are the two solutions for x?

A. $7+2b$ **B.** $7b$ **C.** $14b$ **D.** 14 **E.** 7

3. If the circumference of a circle is $\frac{4}{7}\pi$ inches, how many inches long is its radius?

A. $\frac{\sqrt{7}}{2}$ **B.** $\sqrt{\left(\frac{4}{7}\right)}$ **C.** $\frac{7}{4}$ **D.** $\frac{7}{2}$ **E.** $\frac{2}{7}$

---

*pr***ACT***ice* 84

1. For $a \neq 0$, $\frac{(a^3)^5}{a^3 \cdot a^5} =$?

A. 1 **B.** a^{-5} **C.** $\frac{1}{a^7}$ **D.** a^7 **E.** 7

2. Which of the following is equal to $\frac{\left(\frac{1}{3}+\frac{2}{5}\right)}{\left(\frac{1}{5}-\frac{1}{3}\right)}$?

A. $-\frac{1}{2}$ **B.** $\frac{1}{11}$ **C.** $\frac{1}{2}$ **D.** $-\frac{2}{11}$ **E.** $-\frac{11}{2}$

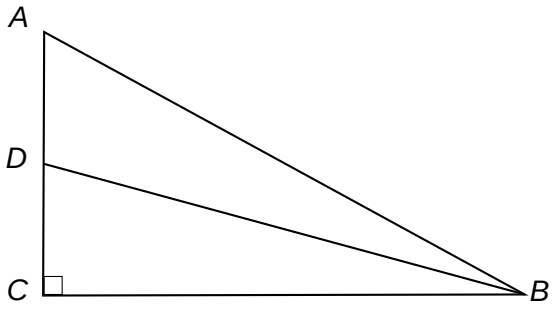
3. How many different 4-digit integers can be formed if the four digits 2, 3, 5 and 6 must be used in each of the integers?

A. 6 **B.** 12 **C.** 24 **D.** 16 **E.** 180

---

*pr***ACT***ice* 85

1. In $\triangle ABC$ below, A, D and C are colinear. Segment AC is perpendicular to segment BC, and segment BD bisects angle ABC. If the measure of angle DAB is 50°, what is the measure of angle CDB?



A. 40° **B.** 70° **C.** 50° **D.** 85° **E.** 60°

2. For what nonzero whole number m does the quadratic equation $x^2+3mx+\frac{9}{2}m=0$ have exactly one real solution for x?

A. 6 **B.** 3 **C.** 1 **D.** -3 **E.** -6

3. A circle in the standard (x,y) coordinate plane has center $(-5,8)$ and radius 7 units. Which of the following equations represents this circle?

A. $(x-5)^2+(y+8)^2=49$ **B.** $(x+5)^2+(y-8)^2=49$

C. $(x+5)^2+(y-8)^2=7$ **D.** $(x+5)^2-(y-8)^2=49$

E. $(x-5)^2+(y-8)^2=7$

---

*pr***ACT***ice* 86

1. You have enough material to build a fence 180 meters long. If you use it all to enclose a square region, how many square meters will you enclose?

A. 2025 **B.** 1800 **C.** 900 **D.** 240 **E.** 180

2. If $a^2-b^2=81$ and $a+b=9$, then $a=$?

A. 0 **B.** 9 **C.** 18 **D.** 27 **E.** 81

3. One warning light on a machine flashes every 4 seconds. Another warning light flashes every 6 seconds. If they flash together and you begin counting seconds, how many seconds after they flash together will they next flash together?

A. 24 **B.** 18 **C.** 4 **D.** 6 **E.** 12

---

*pr***ACT***ice* 87

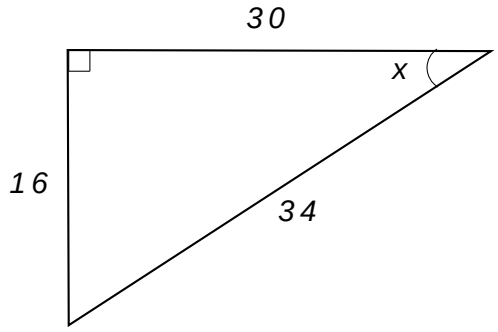
1. If $3+\sqrt{3x}=11$, then $x=$?

A. -9 **B.** -1 **C.** 1 **D.** 9 **E.** 27

2. How many ordered pairs (x,y) of real numbers satisfy the equation $5x-5y=5$

A. 1 **B.** 2 **C.** 5 **D.** Infinitely many **E.** 0

3. For the triangle shown below, what is the value of $\cot x$?



A. $\frac{17}{8}$ **B.** $\frac{17}{15}$ **C.** $\frac{8}{15}$ **D.** $\frac{15}{17}$ **E.** $\frac{15}{8}$

---

*pr***ACT***ice* 88

1. The number 0.004 is 1000 times as large as which of the following numbers?

A. 4 **B.** $.4$ **C.** 0.000004 **D.** 0.00004 **E.** 40

2. What is the corresponding acute angle to a 125° angle?

A. 225° **B.** 235° **C.** 45° **D.** 65° **E.** 55°

3. Which values of x satisfy $5(x-3) \geq 2(3-x)$?

A. $\{x : x \geq 3\}$ **B.** $\{x : x \leq 3\}$ **C.** $\{x : x \leq 7\}$ **D.** $\{x : x \geq 7\}$

E. $\{x : x \geq -7\}$

---

*pr***ACT***ice* 89

1. If $x = 7a - 3$ and $y = a + 1$, which of the following expresses y in terms of x?

A. $y = 7x - 3$ **B.** $y = x + 1$ **C.** $y = \frac{1}{7}x - 10$ **D.** $y = \frac{1}{7}x + 10$

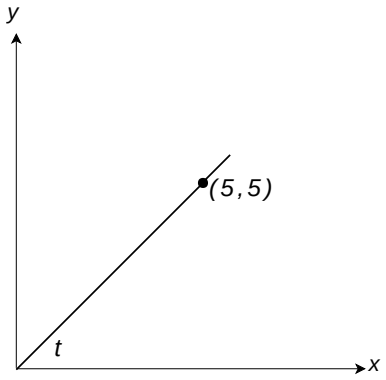
E. $y = \frac{x+10}{7}$

2. In the figure below, $\sin t =$?

A. $\frac{\sqrt{3}}{2}$ **B.** $\frac{\sqrt{2}}{2}$

C. $\frac{1}{2}$ **D.** 1

E. $\frac{1}{5}$



3. Which of the following is **NOT** a solution of $(x-1)(2x+1)(x+4)(x-3)=0$?

A. 1 **B.** -4 **C.** 3 **D.** $\frac{1}{2}$ **E.** $-\frac{1}{2}$

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*pr***ACT***ice* 90

1. In 3-dimensional (x,y,z) space, the set of all points 5 units from the y-axis is:

A. a line. **B.** a circle. **C.** a sphere. **D.** a cylinder.

E. 2 parallel lines.

2. If $0 < ab < 1$, then which of the following **CANNOT** be true?

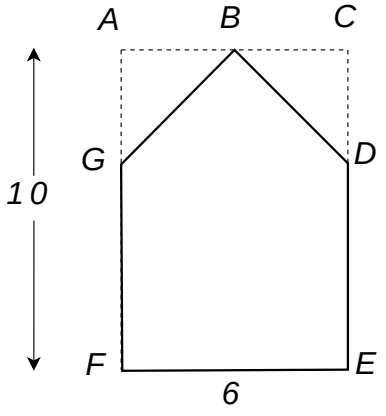
A. $a < 0$ and $b < 1$ **B.** $a < 0$ and $b < -1$

C. $a > 0$ and $b > 1$ **D.** $a < -1$ and $b < -1$

E. $a < 1$ and $b < 1$

3. The polygon below was once a rectangle with sides 10 inches and 6 inches before the two triangles ABG and BCD were cut out. The point B is the midpoint of segment AC and $GFED$ is a square. What is the perimeter, in inches, of the polygon $BDEFG$?

A. 28
B. 27
C. 26
D. 25
E. 24



*pr***ACT***ice* 91

1. On the real number line, point S has coordinate -9 and point T has coordinate -11. What is the coordinate of the midpoint of $\overline{ST}$?

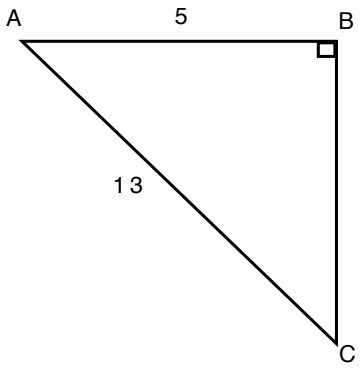
A. -20 **B.** -10 **C.** -2 **D.** 2 **E.** 10

2. Given a right triangle $\triangle ABC$, how many units long is $\overline{BC}$?

A. 5 **B.** 12

C. 13 **D.** $\sqrt{8}$

E. $\sqrt{149}$



3. A Celcius temperature C can be approximated by taking half of the difference of the Fahrenheit temperature F and 32. Which of the following expresses this approximation method?

A. $C = \frac{1}{2}F - 32$ **B.** $C = \frac{1}{2}(F - 32)$

C. $C = 2F - 32$ **D.** $C = (F - 32)^{\frac{1}{2}}$

E. $C = 2(F + 32)$

---

*pr***ACT***ice* 92

1. The daily totals of lunch customers served at the Moonlight Café last Monday through Saturday were $302, 192, 208, 224, 200$, and 224. What was the average number of lunch customers served each day?

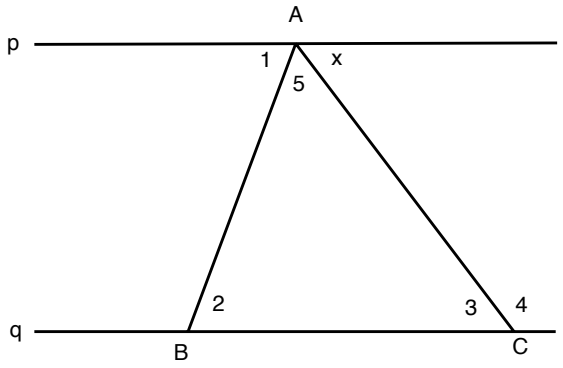
A. 1350 **B.** 510 **C.** 270 **D.** 225 **E.** 224

2. In the figure showing $\triangle ABC$ below, line p is parallel to line q. Which one of the following angles must be congruent to $\angle x$?

A. $\angle 1$ **B.** $\angle 2$

C. $\angle 3$ **D.** $\angle 4$

E. $\angle 5$



3. A package of three pencil erasers is priced at \$1.20 now. If the erasers were to go on sale for 20% off the current price, what will be the sale price of the package?

A. \$0.24 **B.** \$0.64 **C.** \$0.96 **D.** \$1.00 **E.** \$1.40

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*pr***ACT***ice* 93

1. Karli has 3 more DVDs than Jeremy. Then she bought 2 DVDs from Jeremy. How many more DVDs does Karli have than Jeremy?

A. 1 **B.** 4 **C.** 5 **D.** 6 **E.** 7

2. What is the value of $|12-x|$ if $x=15$?

A. -27 **B.** -3 **C.** 3 **D.** 6 **E.** 27

3. For all x and y, $(3x-2y)(x^2+y)=$?

A. $3x^3-3y^3$ **B.** $3x^2-2y^2$

C. $3x^3+3x^2y+3x^2y^2$ **D.** $3x^3-x^2y+6xy-2y^2$

E. $3x^3-2x^2y+3xy-2y^2$

---

*pr***ACT***ice* 94

1. For all x, $12-4(x-7)=$?

A. $-4x+40$ **B.** $-4x-16$ **C.** $8x-56$ **D.** $8x+56$ **E.** x

2. $(x^3)^{10}$ is equivalent to:

A. x^{30} **B.** x^{13} **C.** $12x^{27}$ **D.** x^{27} **E.** $30x$

3. What is the 218^{th} digit after the decimal point in the repeating decimal $0.\overline{30281}$?

A. 3 **B.** 0 **C.** 2 **D.** 8 **E.** 1

*pr***ACT***ice* 95

1. The area of a square is 100 square inches. What is its perimeter, in inches?

A. 10 **B.** 20 **C.** 40 **D.** 100 **E.** 400

2. What is the sum of the 2 solutions of the equation $x^2 + 3x - 18 = 0$?

A. -6 **B.** -3 **C.** 3 **D.** 6 **E.** 9

3. Shelly won a cash settlement in a court case. Sherry paid her legal team 20% of the original settlement and had \$10,000 remaining. How much was the original settlement?

A. 2,000 **B.** 12,000 **C.** 12,500 **D.** 18,000 **E.** 20,000

---

*pr***ACT***ice* 96

1. When $x = \frac{2}{3}$, what is the value of $\frac{9x-3}{x}$?

A. 1 **B.** $\frac{3}{4}$ **C.** $\frac{4}{3}$ **D.** 3 **E.** 4

2. Which of the following expressions is **NOT** a polynomial factor of $x^4 - 9$?

A. $x^2 + 3$ **B.** $x^2 - 3$ **C.** $x - \sqrt{3}$ **D.** $x + \sqrt{3}$ **E.** $x - 3$

3. How many minutes would it take a train to travel 105 kilometers at a constant speed of 140 kilometers per hour?

A. 30 **B.** 40 **C.** 45 **D.** 80 **E.** 90

---

*pr***ACT***ice* 97

1. The area of a trapezoid may be found by using the formula $A = \frac{1}{2}h(b_1 + b_2)$, where h is the height and b_1 and b_2 are the lengths of the parallel bases. What is the area, in square inches of the isosceles trapezoid below?

A. 30 **B.** 45 **C.** 60 **D.** 75 **E.** 100

2. For a certain quadratic equation, $ax^2 + bx + c = 0$, the 2 solution are $x = \frac{3}{4}$ and $x = -\frac{2}{3}$. Which of the following could be factors of $ax^2 + bx + c = 0$

A. $(4x+2)$ and $(3x-3)$ **B.** $(4x-2)$ and $(3x-3)$

C. $(4x+3)$ and $(3x-2)$ **D.** $(4x-3)$ and $(3x+2)$

E. $(4x+3)$ and $(3x+2)$

3. A rectangular room that is 3 feet longer than it is wide has an area if 130 square feet. How many feet wide is the room?

A. 9 **B.** 10 **C.** 13 **D.** 17 **E.** 21

---

*pr***ACT***ice* 98

1. What is the center of the circle with equation $(x-5)^2+(y+3)^2=4$ in the standard (x,y) coordinate plane?

A. $(2,2)$ **B.** $(5,-3)$ **C.** $(-5,3)$ **D.** $(2,3)$ **E.** $(-5,-3)$

2. What is the slope of the line joining the points $(3,6)$ and $(-2,9)$?

A. $-\frac{3}{5}$ **B.** $\frac{3}{5}$ **C.** $-\frac{5}{3}$ **D.** $\frac{5}{3}$ **E.** $\frac{1}{15}$

3. In the standard (x,y) coordinate plane, what is the midpoint of the line segment that has endpoints $(4,-6)$ and $(-2,8)$

A. $(2,2)$ **B.** $(6,14)$ **C.** $(1,1)$ **D.** $(-1,-2)$ **E.** $\left(\frac{1}{2},\frac{1}{2}\right)$

---

*pr***ACT***ice* 99

1. Which of the following expressions is equivalent to $(-3x^3y^4)^3$?

A. $-9x^9y^{12}$ **B.** $-27x^6y^7$ **C.** $9x^6y^7$ **D.** $-27x^9y^{12}$ **E.** $-9x^6y^{12}$

2. A line contains the points Q,R,S, and T. Point R is between points Q and S. Point T is between points S and R. Which of the following inequalities must be true about the lengths of the segments?

A. $RS<QR$ **B.** $RT<QR$ **C.** $RT<ST$ **D.** $ST<QR$

E. $ST<RS$

3. If $\frac{x^s}{x^t}=x^7$ for all $x\neq 0$, which of the following must be true?

A. $s-t=7$ **B.** $s+t=7$ **C.** $s\times t=7$ **D.** $\sqrt{st}=7$ **E.** $\frac{s}{t}=7$

*pr***ACT***ice* 100

1. Which of the following is the least common denominator for the expression below?

$$\frac{1}{5^3 \cdot 7 \cdot 11^2} + \frac{1}{5^2 \cdot 11^8} + \frac{1}{5 \cdot 7^2 \cdot 11}$$

A. $5 \cdot 11$ **B.** $5 \cdot 7 \cdot 11$ **C.** $5^3 \cdot 7^2 \cdot 11^2$ **D.** $5^3 \cdot 7^2 \cdot 11^8$

E. $5^5 \cdot 7^3 \cdot 11^9$

2. In the standard (x,y) coordinate plane, what is the slope of the line given by the equation $3x - 2y = 5$?

A. -3 **B.** $-\frac{3}{2}$ **C.** $\frac{2}{3}$ **D.** $\frac{3}{2}$ **E.** 3

3. $\frac{1}{2} \cdot \frac{2}{4} \cdot \frac{3}{5} \cdot \frac{4}{6} \cdot \frac{5}{7} \cdot \frac{6}{8} \cdot \frac{7}{9} \cdot \frac{8}{10} = ?$

A. $\frac{1}{60}$ **B.** $\frac{1}{30}$ **C.** $\frac{1}{9}$ **D.** 1 **E.** 5

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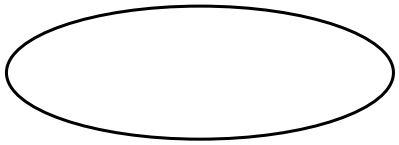
*pr***ACT***ice* 101

1. The Audio/Visual Club selects its 3 officers by first selecting the president, then the vice president, and the the secretary. If there are 30 members who are eligible to hold office and no member can hold more than 1 office, which of the following gives the number of different possible results of the election?

A. 27^3 **B.** 29^3 **C.** 30^3 **D.** $29 \cdot 28 \cdot 27$ **E.** $30 \cdot 29 \cdot 28$

2. The ellipse shown below intersects any different ellipse in, at most, how many points?



A. 1 **B.** 2 **C.** 3 **D.** 4 **E.** Infinitely many

3. What value of m will satisfy the equation $0.2(m + 2{,}500) = m$?

A. 1250 **B.** 1190 **C.** 625 **D.** 500 **E.** 423

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*pr***ACT***ice* 102

1. A store takes 50% off of the retail price of a chair. For the store's holiday sale, it takes an additional 20% off of all furniture. The chair's retail price was \$320. How much is the chair on sale for during the holiday season.

A. 107 **B.** 114 **C.** 128 **D.** 136 **E.** 192

2. Jim wants to expand his flowerbed by 3 feet on each side. What will the new area of the flowerbed be?

A. $3LW$ **B.** $3(L+W)$ **C.** $3L+3W$ **D.** $(L+3)(W+3)$ **E.** $\frac{LW}{2}$

3. Frank invested $\$4,000$ at 5% interest. How long will it take him to earn \$200 in simple interest?

A. 1year **B.** 2years **C.** 3years **D.** 4years **E.** 5years

---

*pr***ACT***ice* 103

1. In $\triangle ABC$, $\overline{AB} = \overline{BC}$. If angle C's measure is 65°, what is the measure of angle B?

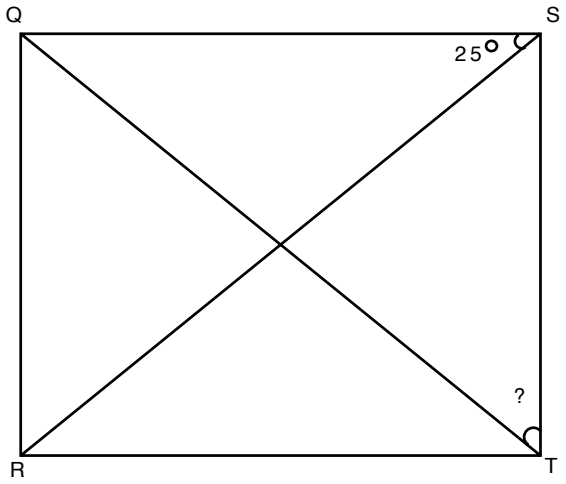
A. 40° **B.** 50° **C.** 60° **D.** 65° **E.** 75°

2. In the parallelogram $QRST$ shown below, $\overline{QS}$ is perpendicular to $\overline{ST}$ and the measure of $\angle QSR$ is 25°. What is the measure of $\angle QTS$?

A. 25° **B.** 40°

C. 50° **D.** 65°

E. 90°



3. Write 0.00925 in scientific notation.

A. 925×10^{-5} **B.** 92.5×10^{-4} **C.** 9.25×10^{-3} **D.** 9.25×10^{3}

E. 92.5×10^{4}

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*pr***ACT***ice* 104

1. There are 15 balls in a bag: 8 are red, 4 are blue, and 3 are purple. What is the probability that a ball chosen from the bag is **NOT** purple?

A. $\frac{4}{5}$ **B.** $\frac{8}{15}$ **C.** $\frac{1}{5}$ **D.** $\frac{15}{15}$ **E.** $\frac{3}{4}$

2. Which of the following best describes all points in a plane that are 5 inches from a given point in the plane?

A. A circle with a 5 inch radius.

B. A circle with a 5 inch diameter.

C. A line segment 5 inches in length.

D. A square with 5 inch sides.

E. Parallel lines 10 inches apart.

3. When $ac - b = d$ and $c \neq 0$, then $a =$?

A. $\frac{d-b}{c}$ **B.** $\frac{d+b}{c}$ **C.** $d-b-c$ **D.** $d-b+c$ **E.** $d+b-c$

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*pr***ACT***ice* 105

1. Given a plane, p, and a 10 inch line segment, s, contained in p, how many lines in p bisect s?

A. 0 **B.** 1 **C.** 2 **D.** 10 **E.** Infinitely many

2. When $\frac{x+5}{x^2+x-20}$ is defined, it is equivalent to which of the following expressions?

A. $\frac{1}{x+4}$ **B.** $2x-4$ **C.** $\frac{1}{x-4}$ **D.** $\frac{1}{x^2-4}$ **E.** $\frac{1}{4}$

3. For all real numbers m and n such that $\left|\frac{m}{n}\right| = \left|\frac{n}{m}\right|$ which of the following must be **FALSE**?

A. $n = -\frac{1}{n}$ **B.** $n = \sqrt{n^2}$ **C.** $m = -\sqrt{n^2}$ **D.** $m = -n$ **E.** $m = n$

---

*pr***ACT***ice* 106

1. If the edges of a small cube are doubled in length to produce a new, larger cube, then the larger cube's volume is how many times the smaller cube's volume?

A. 2 **B.** 3 **C.** 4 **D.** 6 **E.** 8

2. A cat eats 5 cans of food in 4 days. At this rate, how many cans of food does the cat eat in $4+d$ days?

A. $\frac{5}{4}+d$ **B.** $\frac{5}{4}+\frac{d}{4}$ **C.** $\frac{5}{4}+\frac{5}{4d}$ **D.** $5+\frac{d}{4}$ **E.** $5+\frac{5}{4}d$

3. A vehicle starts with a full tank of gasoline and travels 120 miles. While refilling the tank the driver notices that the vehicle used $\frac{1}{5}$ tank of gasoline in traveling the 120 miles. Assuming the vehicle averages 30 miles per gallon, approximately how many gallons of gasoline does the tank hold when full?

A. 5 **B.** 15 **C.** 18 **D.** 20 **E.** 30

*pr***ACT***ice* 107

1. A rectangular lot that measures 100 ft by 200 ft is completely fenced. What is the approximate length, in feet, of the fence?

A. 250 **B.** 300 **C.** 400 **D.** 600 **E.** 2000

2. If $5x+3=9x-4$, then $x=$?

A. 7 **B.** $\frac{7}{4}$ **C.** $\frac{4}{7}$ **D.** $-\frac{2}{3}$ **E.** $-\frac{4}{7}$

3. A formula for the volume V of a sphere with radius r is $V=\frac{4}{3}\pi r^3$. If the radius of a rubber ball is $1\frac{1}{2}$ inches, what is its volume to the nearest cubic inch?

A. 9 **B.** 14 **C.** 27 **D.** 42 **E.** 56

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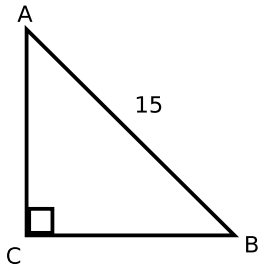
*pr***ACT***ice* 108

1. What is the y-coordinate of the point in the line in the standard (x,y) coordinate plane at which the 2 lines $y=2x+6$ and $y=3x+4$ intersect?

A. 1 **B.** 2 **C.** 4 **D.** 6 **E.** 10

2. The hypotenuse of the right triangle $\triangle ABC$ shown below is 15 feet long. The sine of $\angle A$ is $\frac{3}{5}$. How many feet long is $\overline{AC}$?



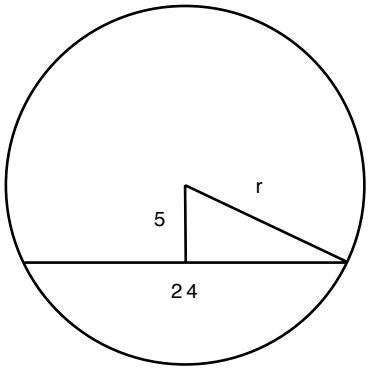
A. 9 **B.** 9.5 **C.** 12 **D.** 15 **E.** 15.4

3. Rasheed has 4 shirts, 3 sweaters, and 6 pairs of slacks. How many distinct outfits, each consisting of a shirt, a sweater, and a pair of slacks, can Rasheed select?

A. 13 **B.** 36 **C.** 42 **D.** 72 **E.** 216

*pr***ACT***ice* 109

1. A chord 24 inches long is 5 inches from the center of a circle. What is the radius of the circle, to the nearest inch?



A. 11 **B.** 13 **C.** 17 **D.** 25 **E.** 29

2. Which of the following is a solution to the equation $x^2 - 49x = 0$?

A. 98 **B.** 49 **C.** 24.5 **D.** 7 **E.** -7

3. If $f(x) = x^2 + 5$, then $f(x+h) =$?

A. $x^2 + h^2$ **B.** $x^2 + 5 + h$

C. $x^2 + 2xh + h^2$ **D.** $x^2 + 2xh + h^2 + 5$

E. $x^2 + 2xh + h^2 + 25$

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*pr***ACT***ice* 110

1. Which of the following is the set of all real numbers x such that $x + 2 > x + 7$?

A. The empty set.

B. The set of all real numbers.

C. The set of all nonnegative real numbers.

D. The set of all negative real numbers.

E. The set containing only zero.

2. If $a = b - 4$, then $(b-a)^3 =$?

A. -64 **B.** -32 **C.** -1 **D.** 32 **E.** 64

3. The expression $a[c + a(b-d)]$ is equivalent to:

A. $ac + abd$ **B.** $ac - abd$ **C.** a^2cbd **D.** $ac + a^2b - a^2d$

E. $ac + a^2b + a^2d$

*pr***ACT***ice* 111

1. If 15 plates cost \$12.15. What is the cost of 1 plate?

A. \$0.12 **B.** \$0.65 **C.** \$0.81 **D.** \$1.21 **E.** \$1.29

2. If three angles of a quadrilateral are 80° , 123°, and 56°, what is the fourth angle?

A. 41° **B.** 86° **C.** 101° **D.** 123° **E.** 360°

3. Which of the following is equal to $\sqrt{20}$?

A. $2\sqrt{5}$ **B.** $2\sqrt{10}$ **C.** $4\sqrt{5}$ **D.** 10 **E.** $10\sqrt{2}$

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*pr***ACT***ice* 112

1. There are n students in a class. If, among those students, $d\%$ own at least 1 dog, which of the following general expressions represents the number of students who do **NOT** own pets?

A. nd **B.** $.01nd$ **C.** $\dfrac{(d-100)n}{100}$ **D.** $\dfrac{(1-d)n}{.01}$ **E.** $100(1-d)n$

2. A bag of quarters could be divided among 6, 7, or 8 children, with each getting the same number, and 1 left over in each case. What is the smallest number a quarters that could be in the bag?

A. 22 **B.** 43 **C.** 57 **D.** 169 **E.** 337

3. Jeremy ran $1\frac{3}{4}$ miles on Wednesday, and $3\frac{1}{5}$ miles on Friday. What is the total distance, in miles, that Jeremy ran during those 2 days?

A. $4\frac{4}{15}$ **B.** $4\frac{4}{9}$ **C.** $5\frac{4}{9}$ **D.** $6\frac{9}{20}$ **E.** $7\frac{3}{9}$

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*pr***ACT***ice* 113

1. If a rectangle measures 8 meters by 4 meters, what is the measure of the diagonal of the rectangle?

A. 80 **B.** 32 **C.** 12 **D.** $4\sqrt{5}$ **E.** $2\sqrt{5}$

2. What is the slope intercept form of the equation $6x-y+4=0$?

A. $y=-6x-4$ **B.** $y=-6x+4$ **C.** $y=6x+4$ **D.** $y=6x-4$

E. $y=6x+\dfrac{2}{3}$

3. The ratio of the side lengths of a triangle is exactly $6:7:8$. In a second similar triangle similar to the first, the shortest side is 14 inches long. To the nearest tenth of an inch, what is the length of the longest side of the second triangle?

A. 10.2 **B.** 12 **C.** 13.5 **D.** 18.7 **E.** 22.1

*pr***ACT***ice* 114

1. If the ratio of the radii of two circles is $2:9$. What is the ratio of their circumferences?

A. $1:3$ **B.** $2:9$ **C.** $4:81$ **D.** $2:8\pi$ **E.** $9:18\pi$

2. A circle in the standard (x,y) coordinate plane is tangent to the x-axis at 3 and tangent to the y-axis at 3. What is the equation of the circle.

A. $x^2+y^2=3$ **B.** $x^2+y^2=9$

C. $(x-3)^2+(y-3)^2=3$ **D.** $(x-3)^2+(y-3)^2=9$

E. $(x+3)^2+(y+3)^2=9$

3. The solution set of $\sqrt{x-2}<5$ is the set of all real numbers x such that:

A. $x<6$ **B.** $x<7$ **C.** $x<27$ **D.** $x<28$ **E.** $x<49$

---

*pr***ACT***ice* 115

1. At a refinery, $120,000$ tons of sand are required to produce $80,000$ barrels of a substance. How many tons of sand are required to produce $12,000$ barrels of this substance?

A. $8,000$ **B.** $12,000$ **C.** $16,000$ **D.** $24,000$ **E.** $40,000$

2. For all positive integers x, y, and z, which of the following expressions is equivalent to $\frac{y}{x}$?

A. $\frac{y\cdot z}{x\cdot z}$ **B.** $\frac{y\cdot y}{x\cdot x}$ **C.** $\frac{x\cdot y}{y\cdot x}$ **D.** $\frac{y-z}{x-z}$ **E.** $\frac{y+z}{x+z}$

3. A student has earned the following scores on four 100-point tests: $87,89,93,81$. What is the minimum the student can make on a fifth test, so that the average of the 5 scores is 90?

A. 80 **B.** 84 **C.** 95 **D.** 100

E. The score is not possible.

---

*pr***ACT***ice* 116

1. A lottery is to be held to select a student you will receive the best parking spot at school. There are 50 seniors, 100 juniors, and 200 sophomores who applied. Each senior's name is placed in the lottery 4 times; each juniors name, 2 times; and each sophomores name 1 time. What is the probability that a junior's name will be chosen?

A. $\frac{2}{5}$ **B.** $\frac{3}{5}$ **C.** $\frac{1}{3}$ **D.** $\frac{2}{3}$ **E.** $\frac{1}{7}$

2. If an object travels at five feet per second, how many feet does it travel in one hour?

A. 30 **B.** 300 **C.** 720 **D.** 1800 **E.** 18000

3. If $x > 1$ and $\frac{\sqrt{x}}{x^5} = x^n$, what is the value of n?

A. 6 **B.** $\frac{5}{2}$ **C.** $-\frac{5}{2}$ **D.** $-\frac{9}{2}$ **E.** -6

---

*pr***ACT***ice* 117

1. If n is divisible by $2, 3$, and 15, which of the following numbers is also divisible by these numbers?

A. $n+5$ **B.** $n+15$ **C.** $n+20$ **D.** $n+30$ **E.** $n+45$

2. For all positive integers a and b, let $a \cdot b$ be defined by the formula $a \cdot b = \frac{a^b+1}{a-2}$. What is the value of $3 \cdot 3$?

A. 9 **B.** 14 **C.** 28 **D.** 42 **E.** 43

3. What is the smallest of four consecutive integers whose sum is 968?

A. 235 **B.** 239 **C.** 242 **D.** 243 **E.** 245

---

*pr***ACT***ice* 118

1. Rick has 7 times as many crayons as Dick, and 3 times as many as Jill. If Dick has less than 21 crayons, what is the maximum number of crayons that Rick can have?

A. 63 **B.** 105 **C.** 120 **D.** 140 **E.** 147

2. What is 2% of 7%?

A. 0.014% **B.** 0.09% **C.** 0.14% **D.** 1.4% **E.** 14%

3. An agent receives a commission of 40 cents for every \$50 of business she procures. What percent is the agent's commission?

A. 0.8% **B.** 1.0% **C.** 1.25% **D.** 1.5% **E.** 2.5%

---

*pr***ACT***ice* 119

1. $(\sqrt{2}-\sqrt{3})^2 =$

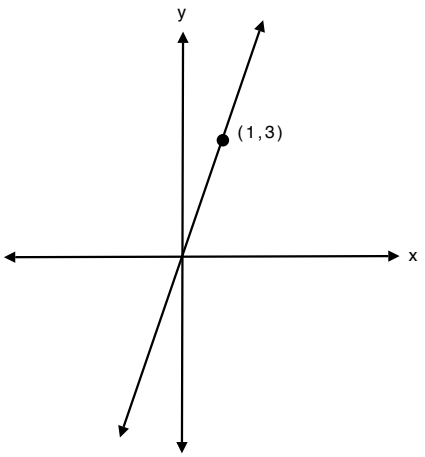
A. $5-2\sqrt{6}$ **B.** $5-\sqrt{6}$ **C.** $1-2\sqrt{6}$ **D.** $1-\sqrt{2}$ **E.** 1

2. In the (x,y) coordinate plane above, line p contains the points $(0,0)$ and $(1,3)$. If line q (not shown), contains the point $(0,0)$ and is perpendicular to p, what is an equation of q?

A. $y = -\frac{1}{3}x$ **B.** $y = \frac{1}{3}x$

C. $y = -x$ **D.** $y = -x + 3$

E. $y = x - 1$



3. A 3 by 4 rectangle is inscribed in a circle. What is the circumference of the circle?

A. 2.5π **B.** 3π **C.** 4π **D.** 5π **E.** 10π

---

*pr***ACT***ice* 120

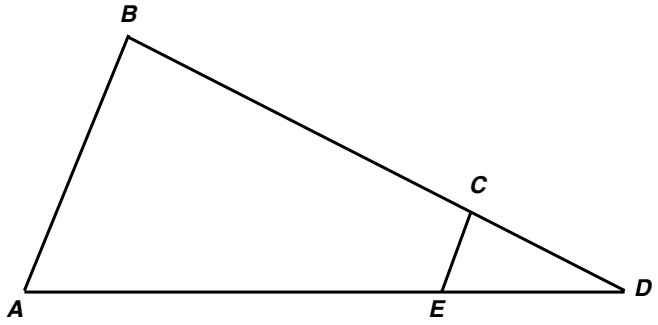
1. Frank currently has enough money to buy 45 books. If the cost of each book was 10 cents less, Frank Could buy 5 more books. How much money does Frank have to spend on books?

A. 40 **B.** 45 **C.** 50 **D.** 75 **E.** 100

2. How many 4-person committees can be formed in a club with 8 members?

A. 2 **B.** 24 **C.** 56 **D.** 70 **E.** 1680

3. In the figure $\overline{AB}$ is parallel to $\overline{CE}$. If $\overline{AE} = 12$, $\overline{DE} = 6$, and $\overline{CE} = 4$. What is the length of $\overline{AB}$?



A. 8 **B.** 10 **C.** 12 **D.** 14 **E.** 16

*pr***ACT***ice* 121

1. If three angles of a triangle are $3x, x+10$, and $2x-40$. Find the size of the smallest angle of the triangle.

A. 30 **B.** 35 **C.** 40 **D.** 45 **E.** 50

2. One hundred people will attend a dance if tickets cost \$30 each. For each \$5 increase in price, 10 fewer people will attend. What price will deliver the maximum dollar sales?

A. 30 **B.** 35 **C.** 40 **D.** 45 **E.** 50

3. Bill can mow a lawn in 2 hours. Quentin can mow the same lawn in 1.5 hours. About how long will it take to mow the lawn if Bill and Quentin work together?

A. 28 minutes **B.** 42 minutes **C.** 51 minutes **D.** 1.2 hours

E. 1.5 hours

---

*pr***ACT***ice* 122

1. Property tax is 7% of the assessed value of a house. How much would the property tax be on a home with an assessed value of $\$80,000$?

A. \$100 **B.** \$450 **C.** $\$1,000$ **D.** $\$5,600$ **E.** $\$10,000$

2. If $(\sin\theta+\cos\theta)^2=5$, then $\sin\theta\cos\theta=$?

A. 1 **B.** 2 **C.** 3 **D.** 4 **E.** 5

3. For what values of x is the expression $\dfrac{x^2-7x+12}{x^2-9}$ undefined?

A. All real numbers **B.** -3 and 4 **C.** -3 and 3 **D.** 3 only

E. No real numbers

---

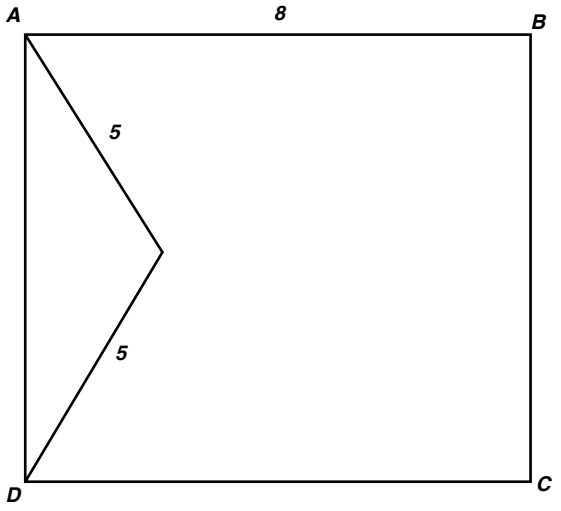
*pr***ACT***ice* 123

1. In the figure below *ABCD* is a square. What is the area of the polygon *ABCDE*?

A. 24 **B.** 44

C. 48 **D.** 52

E. 64



2. Which of the following is the sum of both solutions to the equation $x^2 - 9x + 20 = 0$?

A. -9 **B.** -5 **C.** 0 **D.** 1 **E.** 4

3. $\sqrt{16+36} = ?$

A. 12 **B.** $\sqrt{12}$ **C.** $\sqrt{52}$ **D.** $\sqrt{14}$ **E.** 52

---

*pr***ACT***ice* 124

1. What is the maximum value of $y = -1 + 3(\sin 5\theta)$?

A. 14 **B.** 10 **C.** 7 **D.** 3 **E.** 2

2. Which of the following calculations will give an odd integer for any integer x?

A. x^2 **B.** $5x^2$ **C.** $4x^2 + 1$ **D.** $7x^2 + 1$ **E.** $4x$

3. If $\log_x 100 = 2$, then $x = ?$

A. 2 **B.** 5 **C.** 10 **D.** 50 **E.** 100

---

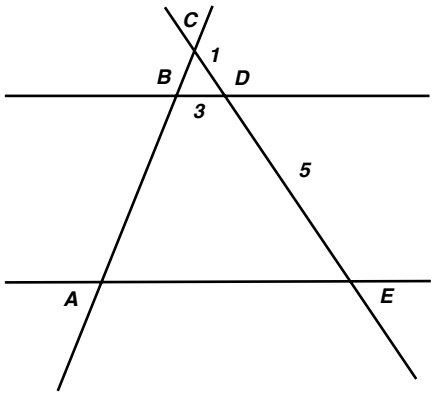
*pr***ACT***ice* 125

1. In the figure below, BD and AE are parallel and crossed by two transversals. The points of intersection and some lengths are shown. What is the length $\overline{AE}$?

A. 5 **B.** 15

C. 15.5 **D.** 17

E. 25



2. The line $y = \frac{1}{3}x - 2$ passes through which one of the following points?

A. $(0,3)$ **B.** $(1,4)$ **C.** $(2,1)$ **D.** $(3,1)$ **E.** $(4,2)$

3. If $\sin\theta = \frac{4}{5}$ and $\tan\theta = \frac{4}{3}$, then $\cos\theta = ?$

A. 1 **B.** $\frac{5}{3}$ **C.** $\frac{4}{3}$ **D.** $\frac{4}{5}$ **E.** $\frac{3}{5}$

*pr***ACT***ice* 126

1. How long will Jenna have to wait before her $\$2,000$ invested at 5% earns \$500 in simple interest?

A. 2 **B.** 3 **C.** 4 **D.** 5 **E.** 6

2. In the fraction $\frac{8}{\theta}$, θ may not be substituted by which of the following sets?

A. $\{1,4,7\}$ **B.** $\{-4,-9,-22\}$ **C.** $\{2,4,8\}$ **D.** $\{2.1,3.2,8.8\}$

E. $\{0,12,5\}$

3. There are 8 ounces in one half of a pound. How many ounces are in $5\frac{3}{4}$ pounds?

A. 107 **B.** 92 **C.** 87 **D.** 46 **E.** 32

---

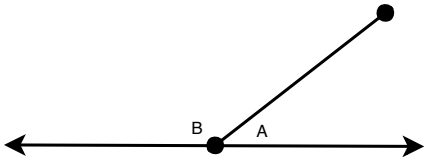
*pr***ACT***ice* 127

1. Of the following units, which is more likely used to measure the amount of water in a bathtub?

A. Volts **B.** Liters **C.** Kilograms **D.** Milliliters

E. Pounds

2. What is the measure of angle B in the following picture if angle A measures 67°?



A. 23° **B.** 67° **C.** 113° **D.** 153° **E.** 180°

3. A television is on sale for \$500. If the sale price is 10% less than the regular price. What was the regular price?

A. $\$1,000$ **B.** \$610 **C.** \$555.56 **D.** \$510.10 **E.** \$505

---

*pr***ACT***ice* 128

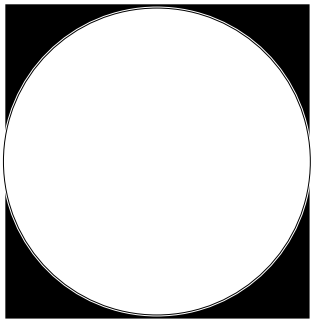
1. $|3-5|\cdot|-3| = ?$

A. -6 **B.** -4 **C.** 1 **D.** 4 **E.** 6

2. What is the x-intercept of the line formed by the equation $y = 2x+8$?

A. $(0,-4)$ **B.** $(0,8)$ **C.** $(-4,0)$ **D.** $(2,0)$ **E.** $(5,0)$

3. A circle is inscribed in the square below. The square has side length 8. What is the area of the shaded region?



A. $8-16\pi$ **B.** $64-8\pi$ **C.** $64-4\pi$ **D.** $64-16\pi$ **E.** $64-32\pi$

---

*pr***ACT***ice* 129

1. For which of the following equations are both 0 and $\frac{5}{4}$ possible solutions for x?

A. $4x^2-5x=0$ **B.** $4x^2+5x=0$ **C.** $5x^2-4x=0$ **D.** $5x^2+4x=0$

E. $x^2-\frac{5}{4}$

2. What graph would be created if the equation $x^2+y^2=16$ were graphed in the standard (x,y) coordinate plane?

A. Two rays forming a V. **B.** Straight line.

C. Parabola. **D.** Ellipse.

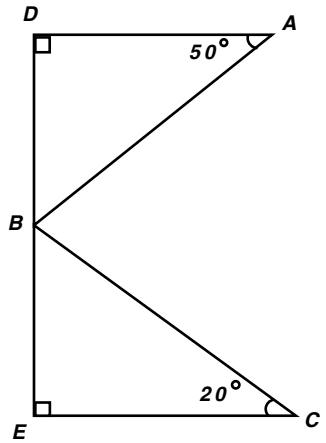
E. Circle.

3. In the figure below, D, B, and E are collinear. What is the measure of $\angle ABC$?

A. 20° **B.** 35°

C. 50° **D.** 60°

E. 70°



*pr***ACT***ice* 130

1. An electrician charges \$60 for the first 30 minutes of each house call plus \$3 for each additional minute. The electrician charges Samantha \$129 for a house call. For what amount of time, in minutes, did the electrician work?

A. 33 **B.** 57 **C.** 63 **D.** 86 **E.** 122

2. If $30-3(2-y)=y+10$, then $y=$?

A. -6 **B.** -1 **C.** 4 **D.** 5 **E.** 11

3. Jane will be x in 8 years. How old was she last year?

A. $x+8$ **B.** $1-x-8$ **C.** $x+9$ **D.** $x-9$ **E.** 70°

---

*pr***ACT***ice* 131

1. On a real number line, $x=-10$ and $y=13$. What is the length of line segment $\overline{XY}$?

A. -3 **B.** 3 **C.** 15 **D.** 23 **E.** 28

2. $\frac{1}{3}\times\frac{2}{5}\times\frac{4}{7}\times\frac{3}{3}=$?

A. $\frac{8}{105}$ **B.** $\frac{8}{315}$ **C.** $\frac{6}{8}$ **D.** $\frac{82}{110}$ **E.** 5

3. $\log_4\frac{N}{M}=$?

A. $\frac{\log_4 N}{\log_4 M}$ **B.** $\log_N 4-\log_M 4$

C. $\log_N 4+\log_M 4$ **D.** $\log_4 N-\log_4 M$

E. None of the above

---

*pr***ACT***ice* 132

1. If $\frac{1}{x}+\frac{1}{y}=\frac{1}{z}$, the $z=$?

A. $x+y$ **B.** xy **C.** $\frac{x+y}{xy}$ **D.** $\frac{xy}{x+y}$ **E.** $\frac{1}{2}ab$

2. Which of the following is greater than $\frac{1}{3}$?

A. .33 **B.** $(\frac{1}{3})^2$ **C.** $\frac{1}{4}$ **D.** $\frac{1}{0.3}$ **E.** $\frac{0.3}{2}$

3. The average of two numbers is P. If one of the numbers is d, what is the other number?

A. $P-d$ **B.** $\frac{P}{2}-d$ **C.** $\frac{A+d}{2}$ **D.** $d-P$ **E.** $2P-d$

*pr***ACT***ice* 133

1. $\dfrac{3\frac{1}{2}}{6\frac{1}{2}} =$

A. $\dfrac{1}{2}$ **B.** $\dfrac{7}{13}$ **C.** 2 **D.** $\dfrac{23}{10}$ **E.** $\dfrac{15}{2}$

2. What is the midpoint of the line segment whose endpoints are represented on the coordinate axis by the points $(-4,8)$ and $(6,10)$?

A. $(-10,18)$ **B.** $(1,9)$ **C.** $(-2,4)$ **D.** $(-1,2)$ **E.** $(3,5)$

3. For all θ, $\dfrac{\sin\theta}{\sin^2\theta+\cos^2\theta} =$

A. $\sin\theta$ **B.** $\cos\theta$ **C.** $\tan\theta$ **D.** $\cot\theta$ **E.** $\sec\theta$

---

*pr***ACT***ice* 134

1. If $x=-5$, then $\dfrac{(x+5)(x-5)}{5} =$

A. 0 **B.** 1 **C.** 5 **D.** 10 **E.** 25

2. $6x+4=28$, what is x?

A. 4 **B.** 5 **C.** 6 **D.** 7 **E.** 8

3. As compared with the graph of $y=\sin x$, which of the following has the same period and 5 times the amplitude?

A. $y=\sin 5x$ **B.** $y=10\sin x$ **C.** $y=\sin(x+5)$ **D.** $y=5+\sin x$

E. $y=1+5\sin x$

---

*pr***ACT***ice* 135

1. Let $i^2=-1$, what is the value of $2i^2+i^4$?

A. -2 **B.** -1 **C.** 0 **D.** 1 **E.** 2

2. For what value of k would the graph of the following system of equations be a single line, in the standard (x,y) coordinate plane?

$$2x+8y=16$$
$$4x+16y=2k$$

A. 2 **B.** 4 **C.** 8 **D.** 16 **E.** 32

3. What is the slope of the line $4x-3y-5=0$?

A. $\dfrac{3}{4}$ **B.** $\dfrac{4}{3}$ **C.** 3 **D.** 4 **E.** 5

*pr***ACT***ice* 136

1. At how many points do the graphs of $x^2+y^2=4$ and $x^2+y^2=16$ intersect?

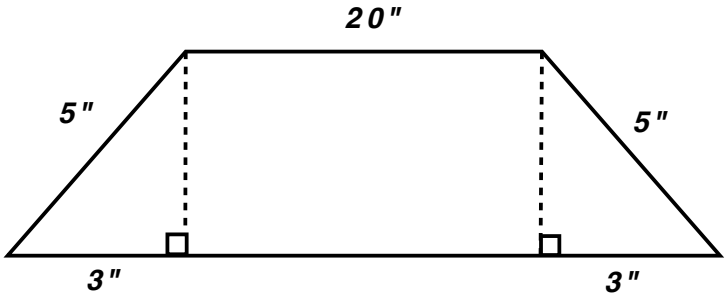
A. 0 **B.** 1 **C.** 2 **D.** 3 **E.** Infinitely many

2. For what value of k would the graph of the following system of equations be a single line in the standard (x,y) coordinate plane.

$$\begin{aligned} 2x+8y &= 16 \\ 4x+16y &= 2k \end{aligned}$$

A. 2 **B.** 4 **C.** 8 **D.** 16 **E.** 32

3. What is the area of the isosceles trapezoid shown below, in square inches?



A. 77 **B.** 86 **C.** 92 **D.** 100 **E.** 108

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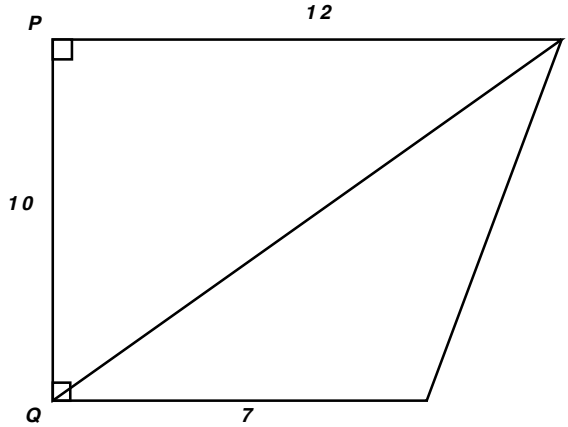
*pr***ACT***ice* 137

1. Angle P and angle Q are right angles. What is the area of the shape below?

A. 146 **B.** 135

C. 120 **D.** 95

E. 70



2. If $x=yz-9$, which of the following provides the value of y in terms of x and z?

A. $(9+x)z$ **B.** $\frac{x}{y}-9$ **C.** $\frac{x}{z}+9$ **D.** $\frac{x}{y}$ **E.** $\frac{x+9}{z}$

3. If $x = -1$, then $5x^2 - 2x + 3 =$?

A. 13 **B.** 10 **C.** 8 **D.** -9 **E.** -15

---

*pr***ACT***ice* 138

1. What is the area of a circle that has circumference 10π?

A. 100 **B.** $10\pi^2$ **C.** 25π **D.** 5π **E.** $5\pi^2$

2. A circle that has its center at the origin passes through the point whose coordinates are $(-1,-1)$. The area of the circle is?

A. $\sqrt{2}\pi$ **B.** $2\sqrt{2}\pi$ **C.** π **D.** 2π **E.** 4π

3. If a sack holds 18 pounds of wheat, how many sacks are needed to hold 40 kilograms of wheat?

A. 1 **B.** 5 **C.** 8 **D.** 20 **E.** 45

---

*pr***ACT***ice* 139

1. What is the area of a circle that has circumference 10π?

A. 100 **B.** $10\pi^2$ **C.** 25π **D.** 5π **E.** $5\pi^2$

2. If $x + 10$ is a positive integer, then x must be

A. Greater than -10 **B.** Odd **C.** Even **D.** Positive

E. Less than 10

3. If $3x + 2 = 20$ and $y - 3x = -10$, what is the value of y?

A. 34 **B.** 28 **C.** 15 **D.** 8 **E.** 3

---

*pr***ACT***ice* 140

1. A right triangle has sides of length $15, 20,$ and 25 meters. What is the area of the triangle in square meters?

A. 60 **B.** 150 **C.** 250 **D.** 625 **E.** $7,500$

2. If $mn = 64$ and $m = n^2$, what is the value of $\frac{m}{n}$?

A. 32 **B.** 16 **C.** 8 **D.** 4 **E.** 2

3. Which of the following numbers is the largest?

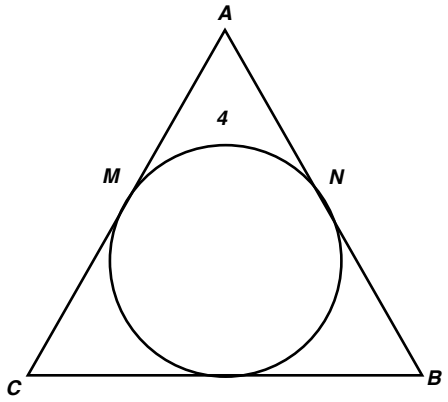
A. 1^{60} **B.** 38^1 **C.** 2^{10} **D.** 1000^0 **E.** 3^3

*pr***ACT***ice* 141

1. If 75 is 30% of x, then $x =$?

A. 100 **B.** 125 **C.** 150 **D.** 200 **E.** 250

2. A circle is inscribed in the equilateral triangle ABC. If the arc length of NM is 4, what is the circumference of the circle?



A. 9 **B.** $\frac{9}{2}$ **C.** 10π **D.** 12 **E.** 16π

3. For all real values of x, $(x+y)(x-z) =$?

A. $x^2+x(y-z)-yz$ **B.** x^2 **C.** $x^2+xyz-yz$ **D.** $x(y-z)$

E. $x^2+x(y-z)$

---

*pr***ACT***ice* 142

1. Which of the following functions will have the smallest value when $x = -2$?

A. $f(x) = x^0$ **B.** $g(x) = x^2+2$

C. $h(x) = x^3+2x$ **D.** $j(x) = x^2-2$

E. $k(x) = x^3-x^2+1$

2. If, for all x, $(x^{y+2})^3 = x^{18}$, then $y =$?

A. 3 **B.** 4 **C.** 5 **D.** 6 **E.** 7

3. There are 120 juniors at a high school. The ratio of seniors to juniors is 2 : 5. How many seniors are at this high school?

A. 48 **B.** 65 **C.** 102 **D.** 250 **E.** 600

*pr***ACT***ice* 143

1. If $(x+y)=5$ and $(x-y)=-3$, then $x^2-y^2=$?

A. 12 **B.** 8 **C.** -2 **D.** -15 **E.** -21

2. If a person can run 2 miles in r minutes, how many miles can they run in 11 minutes?

A. $22r$ **B.** $\frac{11r}{2}$ **C.** $\frac{2}{11r}$ **D.** $\frac{2r}{11}$ **E.** $\frac{11}{2r}$

3. The average of 5 integers is 58. If a sixth number is added to the set of integers, the average of the set increases to 60. What is the sixth number?

A. 40 **B.** 50 **C.** 60 **D.** 70 **E.** 80

---

*pr***ACT***ice* 144

1. On a real number line, what is the distance, in coordinate units, between the points P and Q if point P has coordinate 15, and point Q has coordinate -4?

A. 19 **B.** 15.5 **C.** 11 **D.** $\frac{15}{4}$ **E.** -6

2. $\dfrac{\sin^2 x+\cos^2 x}{\tan x}=$?

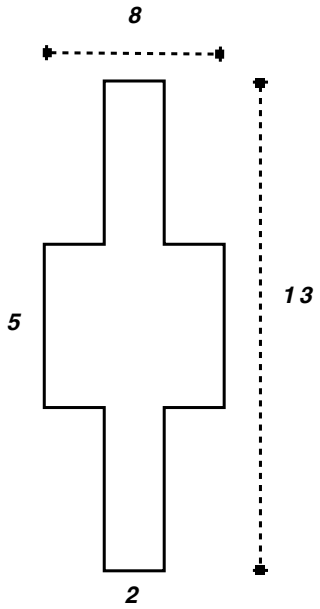
A. $\sin x$ **B.** $\cos x$ **C.** $\tan x$ **D.** $\cot x$ **E.** $\sec x$

3. What is the area of the figure below?

A. 104 **B.** 92

C. 83 **D.** 56

E. 40



*pr***ACT***ice* 145

1. Which of the following lists all of the positive factors of 18?

A. $1, 18$ **B.** $2, 3, 9$ **C.** $18, 36, 54$ **D.** $1, 3, 6, 9, 18$

E. $1, 2, 3, 6, 9, 18$

2. What is x in the following equation: $\log_2 12 - \log_2 3 = \log_6 x$?

A. 4 **B.** 10 **C.** 16 **D.** 36 **E.** 124

3. A function A is defined as follows:

$$A(x) = \begin{cases} 2x^4 + x^3 - 10x + 2 & , \text{ for } x > 0; \\ -2x^4 - x^3 + 10x + 2 & , \text{ for } x < 0. \end{cases}$$

What is the value of $A(-1)$?

A. -10 **B.** -9 **C.** -5 **D.** 0 **E.** 6

---

*pr***ACT***ice* 146

1. What is the median of the following 5 numbers?

$$12, 42, 30, 19, 2$$

A. 9.6 **B.** 15.5 **C.** 19 **D.** 20.8 **E.** 104

2. The edges of a cube are each 2 centimeters long. What is the surface area, in square centimeters, of the cube?

A. 8 **B.** 16 **C.** 24 **D.** 36 **E.** 64

3. For all positive integers x, what is the greatest common factor of $360x$ and $72x$

A. 6 **B.** 36 **C.** x **D.** $36x$ **E.** $72x$

---

*pr***ACT***ice* 147

1. Two lines, $y = ax + b$ and $y = cx + d$ are parallel. Which of the following statements much be true about the relationship between a and c?

A. $a = -\dfrac{1}{c}$ **B.** $a \leq c$ **C.** $a = c$ **D.** $a \geq c$ **E.** $a > c - 1$

2. What are the real solutions to the equation $|x|^2 - 3|x| + 2 = 0$?

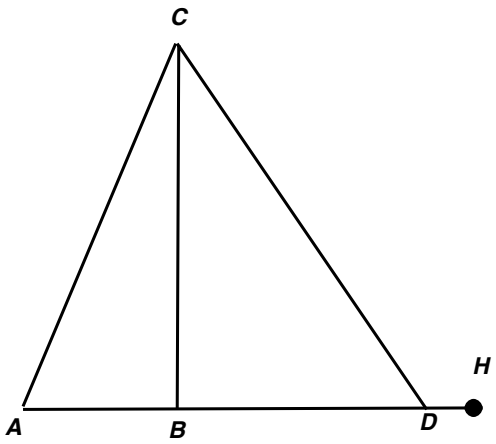
A. $1, -1$ **B.** $2, -2$ **C.** $1, 2$ **D.** $-1, -2$ **E.** $-3, -1, 1, 3$

3. In the figure below A, B, D, and H are collinear. If $\angle CAB$ measures $70°$, and $\angle CDH$ measures $130°$, and $\angle BCD$ measures $50°$, what is the measure of $\angle ACB$?

A. $10°$ **B.** $25°$

C. $50°$ **D.** $80°$

E. $100°$



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*pr***ACT***ice* 148

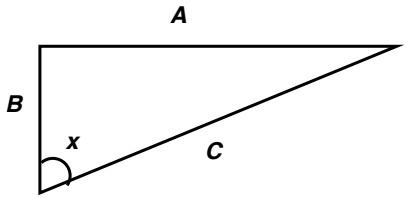
1. The sum of two angles in an equilateral triangle is:

A. $30°$ **B.** $60°$ **C.** $90°$ **D.** $120°$ **E.** $180°$

2. The sum of two numbers is 28. Their difference, $x - y$, is 8. What is the value of y?

A. 36 **B.** 20 **C.** 18 **D.** 10 **E.** 4

3. In the right triangle below, which of the following equations holds?



A. $\sin x = \dfrac{B}{C}$ **B.** $\tan x = \dfrac{B}{C}$ **C.** $\cos x = \dfrac{B}{C}$ **D.** $\sec x = \dfrac{B}{C}$

E. $\csc x = \dfrac{B}{C}$

---

*pr***ACT***ice* 149

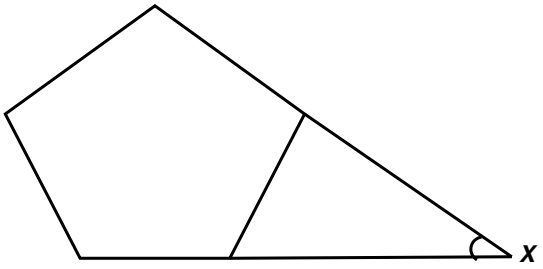
1. What is the length, in meters, of the hypotenuse of a right triangle with legs that are 5 and 9 feet?

A. 8 **B.** $\sqrt{106}$ **C.** $\sqrt{82}$ **D.** 86 **E.** 106

2. If $f(x) = \sqrt{x}$ and $g(x) = x^2 + 3$, what does $f(g(2))$?

A. 5 **B.** $\sqrt{7}$ **C.** $\sqrt{12}$ **D.** 12 **E.** 14

3. In the figure below the pentagon is regular, and 2 nonadjacent sides are extended until the meet at a the point X. What is the measure of $\angle X$?



A. 18° **B.** 30° **C.** 36° **D.** 45° **E.** 72°

---

*pr***ACT***ice* 150

1. Which of the following is symmetric about the x-axis in the standard (x,y) coordinate plane?

A. $y=\sqrt{x}$ **B.** $y=x^2$ **C.** $y=(x-2)^2$ **D.** $x=y^2$ **E.** $x=y$

2. What is the next number in the geometric sequence?

$$1,3,9,27,\ldots$$

A. 243 **B.** 81 **C.** 64 **D.** 36 **E.** 30

3. Which of the following is not a rational number?

A. -13 **B.** $0.54\overline{222}$ **C.** 0.68 **D.** $\sqrt{5}$ **E.** $\dfrac{76}{119}$

---

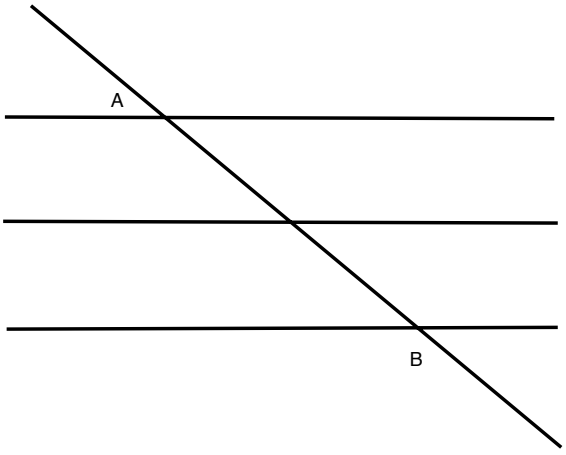
*pr***ACT***ice* 151

1. In the figure below there are 3 parallel lines with a transversal. If $\angle A=48^\circ$. What is the measure of angle B?

A. 132° **B.** 102°

C. 112° **D.** 48°

E. 42°



2. For $i = \sqrt{-1}$, then $i^3 - i^2 =$?

A. i **B.** $2i$ **C.** $i+1$ **D.** $i-1$ **E.** $1-i$

3. Which of the following inequalities is equivalent to $3 < \sqrt{x} < 5$?

A. $0 < x < 2$ **B.** $0 < x < 15$ **C.** $\sqrt{3} < x < \sqrt{5}$ **D.** $3 < x < 5$

E. $9 < x < 25$

---

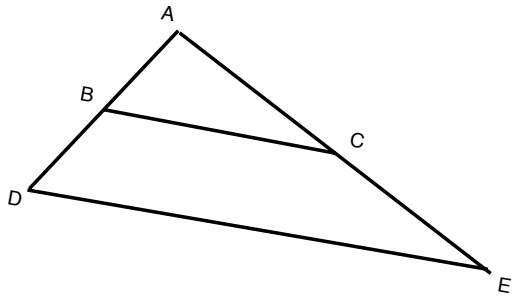
*pr***ACT***ice* 152

1. In $\triangle DAE$, $\overline{BC} || \overline{DE}$. If $\dfrac{AB}{BD} = \dfrac{5}{2}$ then $\dfrac{AE}{AC} =$?

A. $\dfrac{5}{7}$ **B.** $\dfrac{3}{2}$

C. $\dfrac{3}{2}$ **D.** $\dfrac{7}{5}$

E. $\dfrac{7}{3}$



2. If $f(3) = 2$ and $f(1) = 7$, which of the following could represent $f(x)$?

A. $\dfrac{2}{3}x$ **B.** $8x-1$ **C.** $2x-4$ **D.** $6x+1$ **E.** $\dfrac{5}{2}x + \dfrac{9}{2}$

3. On a math test, 8 students earned a B. This number is 25% of the total number of students in the class. How many students are in the class?

A. 11 **B.** 14 **C.** 32 **D.** 56 **E.** 200

---

*pr***ACT***ice* 153

1. For positive real numbers x, y, and z, which of the following expressions are equivalent to $x^{\frac{1}{2}} y^{\frac{2}{3}}$?

A. $x^{\frac{1}{3}}$ **B.** $\sqrt[3]{x^6 y^2}$ **C.** $\sqrt{x^6 y^3}$ **D.** $\sqrt[6]{x^3 y^4}$ **E.** $\sqrt[4]{xy^3}$

2. The cost of x oranges is d dollars. What is the general formula for the cost, in dollars, of y oranges?

A. $\dfrac{dy}{x}$ **B.** $\dfrac{x}{dy}$ **C.** $\dfrac{xy}{d}$ **D.** $\dfrac{dx}{y}$ **E.** $\dfrac{d}{xy}$

3. A certain number of concert tickets are to be given away at a promotion. If $\frac{3}{8}$ of the tickets are distributed in the morning, and $\frac{1}{3}$ are given away in the afternoon, what fraction of the tickets are left to be distributed in the evening?

A. $\frac{7}{8}$ **B.** $\frac{3}{8}$ **C.** $\frac{1}{2}$ **D.** $\frac{1}{6}$ **E.** $\frac{7}{24}$

---

*pr***ACT***ice* 154

1. If $\log_x 81 = 2$, what is the value of x?

A. 2 **B.** 3 **C.** 5 **D.** 9 **E.** 18

2. If for all $x \neq -5$, $\frac{x^2-25}{x+5} = 14$. What is the value of x?

A. 25 **B.** 19 **C.** 12 **D.** 5 **E.** $\frac{14}{5}$

3. What is the positive value of x in the equation $2x^2+8x-10=0$?

A. -1 **B.** 1 **C.** 5 **D.** 10 **E.** 12

---

*pr***ACT***ice* 155

1. If $\frac{x^2+7x+12}{x+3} = 5$, then $x =$?

A. -3 **B.** -2 **C.** 1 **D.** 4 **E.** 7

2. What is eight more than triple the product of a certain number x and 3?

A. $3x+8$ **B.** $9x+8$ **C.** $(3x)^3+8$ **D.** $x+11$ **E.** $3x^3+8$

3. A a school cafeteria, students can choose from 2 different salads, 8 different main dishes, and 2 desserts. How many different combinations of meals are there?

A. 8 **B.** 16 **C.** 32 **D.** 120 **E.** 10080

---

*pr***ACT***ice* 156

1. If $5x = 1$ and $5y = 1$, what is the value of $x+y$?

A. -2 **B.** 0 **C.** $\frac{1}{5}$ **D.** $\frac{2}{5}$ **E.** 10

2. What is the slope of the line $x = 3$?

A. 0 **B.** 1 **C.** 3 **D.** $-\frac{1}{3}$ **E.** Undefined

3. $3\sqrt{5}\cdot\sqrt{5} =$?

A. $3\sqrt{10}$ **B.** $\sqrt{30}$ **C.** $15\sqrt{5}$ **D.** 15 **E.** 125

*pr***ACT***ice* 157

1. If the area of a circle is 36 meters, what is its radius?

A. $x^{\frac{1}{3}}$ **B.** $\frac{6\sqrt{\pi}}{\pi}$ **C.** $\sqrt{x^6y^3}$ **D.** $\sqrt[6]{x^3y^4}$ **E.** $\sqrt[4]{xy^3}$

2. The graph of $y-x^2=0$ is a(n) ?

A. Ellipse **B.** Circle **C.** Line **D.** Parabola **E.** Triangle

3. Let A and B be the endpoints of a line with midpoint $(2,8)$. If $A=(-8,12)$, then what is B?

A. $(6,20)$ **B.** $(-10,-4)$ **C.** $(12,4)$ **D.** $(-3,18)$ **E.** $(-4,4)$

---

*pr***ACT***ice* 158

1. Which of the following is equivalent to $\tan^2 x+1$?

A. $\sin x$ **B.** $\cos x$ **C.** $\tan x$ **D.** $\sec x$ **E.** $\csc x$

2. How much greater is the product of $-8,-7$, and 3 than their sum?

A. -180 **B.** -100 **C.** 80 **D.** 100 **E.** 180

3. Jim bought three shirts at a store. If he paid a total of \$10 for two shirts and the average cost of the three shirts was \$7, what was the cost of the third shirt?

A. \$7 **B.** \$9 **C.** \$10 **D.** \$11 **E.** \$21

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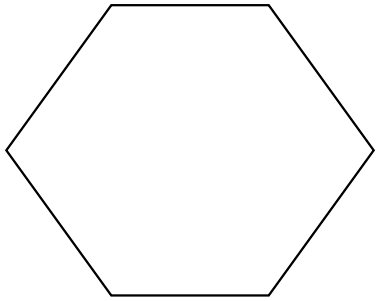
*pr***ACT***ice* 159

1. What is the maximum number of distinct diagonals that can be drawn in the hexagon below?



A. 6 **B.** 9 **C.** 12 **D.** 15 **E.** 6!

2. In a class room of 40 students, 18 are female. What percent of the classroom is male?

A. 22% **B.** 45% **C.** 55% **D.** 65% **E.** 72%

3. If the area of a triangle is 32 square units, and the length of the base of the triangle is 16 units, what is the height of the triangle?

A. 1 **B.** 2 **C.** 4 **D.** 16 **E.** 18

---

*pr***ACT***ice* 160

1. The equation $x^2 = 6x - 9$ has how many distinct real solutions?

A. 0 **B.** 1

C. 2 **D.** 3

E. Cannot be determined from above information.

2. What is the $y-$intercept of the line with the equation $x - 5y = 35$?

A. -7 **B.** 7 **C.** $\frac{1}{5}$ **D.** $-\frac{1}{5}$ **E.** -5

3. If xy is negative, which of the following **CANNOT** be negative?

A. $x - y$ **B.** $y - x$ **C.** x^2y **D.** x^2y^2 **E.** x^3y^3

---

*pr***ACT***ice* 161

1. If $t \neq 0$ and $t = t^{-6}$, what is the value of t?

A. -1 **B.** $\sqrt[6]{-6}$ **C.** $\frac{1}{6}$ **D.** 1 **E.** $\sqrt[6]{6}$

2. A circular frame with a width of 2 inches surrounds a circular photo with a diameter of 10 inches. Assuming that the area of the frame does not overlap the area of the photo, what is the area of the frame?

A. π **B.** 44π **C.** 64π **D.** 100π **E.** 144π

3. A business man buys widgets for \$0.50 a piece and sells them for \$1.00 a piece. If there are no other expenses, how many widgets must be sold in order to make a profit of \$400?

A. 300 **B.** 400 **C.** 500 **D.** 600 **E.** 800

*pr***ACT***ice* 162

1. If the sum of two numbers is -27, and their product is 124, then the two numbers are roots for which of the following equations?

A. $x^2 - 27x - 124 = 0$ **B.** $x^2 + 8x - 12 = 0$

C. $x^2 - 27x + 124 = 0$ **D.** $x^2 - 9x + 45 = 0$

E. $x^2 + 9x + 45 = 0$

2. If a regular 6-sided die is tossed 3 times, what is the probability of getting a 5 on all three tosses?

A. $\frac{1}{216}$ **B.** $\frac{1}{36}$ **C.** $\frac{1}{30}$ **D.** $\frac{1}{18}$ **E.** $\frac{1}{6}$

3. The area of a square is 81. The length of its diagonal is approximately which of the following rounded to the nearest whole number?

A. 12 **B.** 13 **C.** 14 **D.** 15 **E.** 16

---

*pr***ACT***ice* 163

1. If X is greater than Y, Z is less than X, and Y is greater than Z, then which of the following is true?

A. $X > Y > Z$ **B.** $Y > X > Z$ **C.** $Z > X > Y$ **D.** $Z > Y > X$

E. $X > Z > Y$

2. If $A = \{1,3,5,7,9\}$ and $B = \{1,2,3,4,5\}$. What is $A \cap B$?

A. $\{1\}$ **B.** $\{4,7,9\}$ **C.** $\{1,3,5\}$ **D.** $\{1,2,3,4,5,7,9\}$ **E.** $\emptyset$

3. If $-x + 7 \geq -5x + 3$, then what is true about x?

A. $x \leq -1$ **B.** $x \geq -1$ **C.** $x \leq 1$ **D.** $x \geq 1$ **E.** $x \leq 4$

---

*pr***ACT***ice* 164

1. In a class of 200 students, 120 study algebra, and 100 study trigonometry. If a student must study at least one of these courses, what percent of the students study trigonometry, but not algebra?

A. 80%

B. 60%

C. 40%

D. 20%

E. The answer cannot be determined from the above information.

2. A tire has a radius of 12 inches. How many rotations will the tire make if it rolls 100 feet? Round to the nearest whole rotation.

A. 1 **B.** 8 **C.** 9 **D.** 16 **E.** 24

3. Find a solution to the following system of equations:

$$\begin{aligned} 2x+3y &= 16 \\ 2x-4y &= -5 \end{aligned}$$

A. $(2,4)$ **B.** $\left(1,\frac{1}{4}\right)$

C. $\left(\frac{7}{2},3\right)$ **D.** There are no solutions.

E. The are infinitely many solutions.

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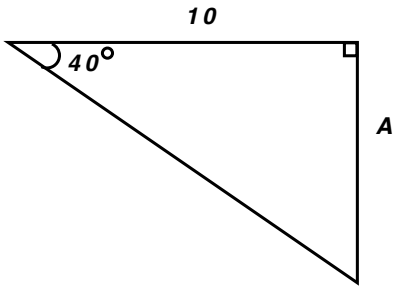
*pr***ACT***ice* 165

1. In the right triangle below, what is the length of side A?



A. 6.54 **B.** 8.39 **C.** 12.51 **D.** 15.7 **E.** 22.21

2. A farmer is making a circular pen for his horses. He needs to enclose an area of 410 square meters. Approximately how much fencing will he need to buy to enclose the entire area?

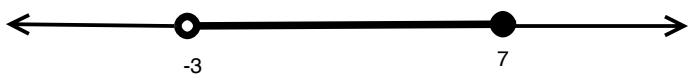
A. 70 **B.** 71 **C.** 72 **D.** 73 **E.** 74

3. Find the next term in the sequence $1,-4,9,-16,25,\ldots$.

A. -36 **B.** -34 **C.** -49 **D.** -41 **E.** 92

*pr***ACT***ice* 166

1. What inequality is represented by the number line below?



A. $-3 < x \leq -7$ **B.** $-3 \leq x \leq 7$ **C.** $-3 \leq < 7$ **D.** $-3 < x < 7$

E. $-3 < x \leq 7$

2. Marie's grandmother gave her \$25.00 for her 12^{th} birthday and continued to give her \$10.00 every month thereafter. What is the amount of money Marie received from her grandmother after m months?

A. $25(n+12)+10$ **B.** $10(n+12)+25$ **C.** $12n+35$ **D.** $10n+25$

E. $25n+10$

3. At a high school there are 200 male students, and 200 female students. If the first 8 students to enter the school in the morning are male, what is the probability that a female will enter the building 9^{th}? (Assume that the students enter randomly.)

A. $\frac{25}{49}$ **B.** $\frac{1}{2}$ **C.** $\frac{1}{4}$ **D.** $\frac{1}{200}$ **E.** $\frac{1}{400}$

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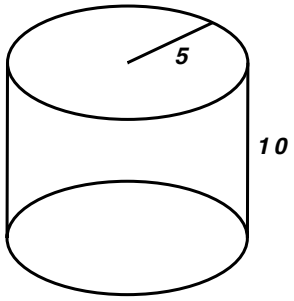
*pr***ACT***ice* 167

Use the cylinder drawn below to answer the following two questions.



1. What is the surface area of the cylinder in square feet?

A. 50π **B.** 100π **C.** 150π **D.** 250π **E.** 300π

2. What is the volume of the cylinder in cubic feet?

A. 50π **B.** 100π **C.** 150π **D.** 250π **E.** 300π

3. Rose takes 20 minutes to wash the dishes. James takes 30 minutes to wash the dishes. How many minutes will it take them to wash the dishes if they work together?

A. 9 **B.** 10 **C.** 11 **D.** 12 **E.** 13

*pr***ACT***ice* 168

1. Which of the following statements is **NOT** true?

A. A square is a rectangle.

B. A parallelogram is a trapezoid.

C. A square is a rhombus.

D. A rhombus is a parallelogram.

E. A square is a parallelogram.

2. A blueprint's scale is 1 inch: 6 feet. On the blue print the kitchen measures 3 inches by 3 inches. What is the real area of the den?

A. 324 ft^2 **B.** 192 ft^2 **C.** 180 ft^2 **D.** 36 ft^2 **E.** 9 ft^2

3. What is the probability of flipping heads on a coin 4 times in a row?

A. $\frac{1}{2}$ **B.** $\frac{1}{8}$ **C.** $\frac{1}{16}$ **D.** $\frac{1}{32}$ **E.** $\frac{1}{64}$

---

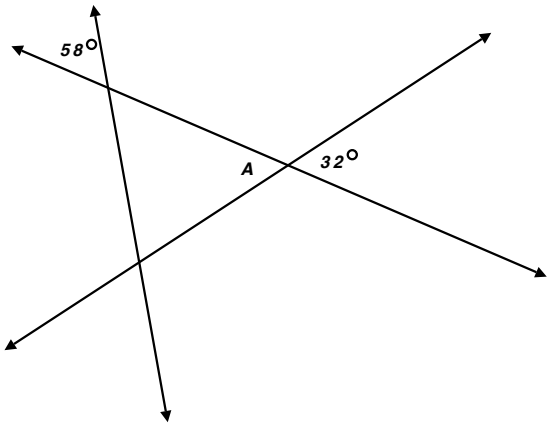
*pr***ACT***ice* 169

1. What is the measure of angle A in the picture below? The angles are measured in degrees.

A. 18° **B.** 32°

C. 58° **D.** 122°

E. 148°



2. Ricardo can ride his bicycle 16 miles per hour. What is his speed in feet per second? (Round to the nearest 10$^{\text{th}}$)

A. 17.9 **B.** 18.7 **C.** 20.3 **D.** 23.5 **E.** 25.3

3. How many solutions are there to the following system of equations?

$$\begin{aligned} y &= x \\ y &= x^2 \end{aligned}$$

A. 0 **B.** 1 **C.** 2 **D.** 3 **E.** Infinitely many

*pr***ACT***ice* 170

1. Which of the following functions is linear?

A. $y = \sqrt{2x-6}$ **B.** $y = 2x-6$ **C.** $y = |2x-6|$ **D.** $y = 2x^2-6$

E. $y = e^{2x-6}$

2. If $A = \{1,4,5\}$, $B = \{3,4,7\}$, and $C = \{1,2,4\}$. What is $(A \cap B) \cup C$?

A. $\{4\}$ **B.** $\{1,2,4\}$ **C.** $\{1,2,3,4,7\}$ **D.** $\{1,4\}$ **E.** $\emptyset$

3. A combination lock has 3 dial with the numbers $0-9$ on each dial. To open the lock each dial has to be turned to the correct number. How many possible combinations are there to open the lock?

A. 1000 **B.** 729 **C.** 720 **D.** 640 **E.** 30

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*pr***ACT***ice* 171

1. What is x if $e^{2x+1} = 5$?

A. $x = 2$ **B.** $x = \dfrac{\ln 2}{5}$ **C.** $x = \dfrac{\ln 5 - 1}{2}$ **D.** $x = \ln 5$

E. $y = e^{2x-6}$

2. Simplify the expression $\dfrac{6x^5 + 10x^3 - 2x}{-2x}$.

A. $14x^6$ **B.** $6x^5 + 10x^3 + 1$ **C.** $6x^5 + 10x^3$ **D.** $-3x^4 - 5x^2 + 1$

E. $-3x^4 - 5x^2$

3. What is the center of the circle given by the equation $x^2 - 12x + y^2 = 0$?

A. $(0,0)$ **B.** $(-12,0)$ **C.** $(-6,0)$ **D.** $(6,0)$ **E.** $(36,0)$

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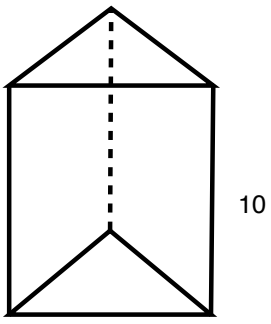
*pr***ACT***ice* 172

1. What is the surface area of the triangular prism below if its height is 10 inches, and the triangle base has an area of 10 square inches?

A. 100 cubic inches
B. 500 cubic inches
C. 650 cubic inches
D. 850 cubic inches
E. 1000 cubic inches



2. Simplify the expression $\dfrac{\sin^2 x + \tan^2 x}{\sin^2 x}$.

A. $\cos^2 x$ **B.** $\sec^2 x$ **C.** $\cot^2 x$ **D.** $\sec^2 x + 1$ **E.** $\csc^2 x + 1$

3. In the (x,y)-coordinate plane, the graph of $y = x^2$ is shifted up 2 units, and to the right 3 units. What is the equation of the translated graph?

A. $y = x^2$ **B.** $y = (x-2)^2 + 3$

C. $y = (x-3)^2 + 2$ **D.** $y = (x+3)^2 + 2$

E. $y = (x-3)^2 - 2$

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*pr***ACT***ice* 173

1. If $\cos\theta = \dfrac{8}{15}$ and $\sin\theta = \dfrac{1}{5}$, what is $\tan\theta$?

A. $\dfrac{1}{8}$ **B.** $\dfrac{1}{15}$ **C.** $\dfrac{3}{8}$ **D.** $\dfrac{8}{3}$ **E.** 15

2. There are 52 cards in a standard deck of cards. There are 4 aces in a deck of cards. What is the probability that 2 aces are drawn out of the deck, one after the other?

A. $\dfrac{1}{2704}$ **B.** $\dfrac{1}{2652}$ **C.** $\dfrac{1}{1326}$ **D.** $\dfrac{1}{52}$ **E.** $\dfrac{1}{26}$

3. Put the following numbers in decreasing order:

$$5.2, 0, -3, \sqrt{5}, \frac{3}{2}, -10$$

A. $-10, -3, 0, \frac{3}{2}, \sqrt{5}, 5.2$ **B.** $-10, -3, 0, \sqrt{5}, \frac{3}{2}, 5.2$

C. $5.2, \frac{3}{2}, \sqrt{5}, 0, -3, -10$ **D.** $0, \frac{3}{2}, -3, \sqrt{5}, 5.2, -10$

E. $5.2, \sqrt{5}, \frac{3}{2}, 0, -3, -10$

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*pr***ACT***ice* 174

1. The range of which of the following functions is $-4 \leq f(x) \leq 4$?

A. $\sin(4x)$ **B.** $\sin(x+4)$ **C.** $(\sin x) + 4$ **D.** $\cos(x+4)$

E. $4\sin x$

2. What is the volume of a cube with an edge length of 5 inches?

A. 25 cubic inches **B.** 25 square inches

C. 125 cubic inches **D.** 125 square inches

E. 18 quartic feet

3. Simplify $x^{-\frac{1}{2}}x^2$.

A. $\sqrt[3]{x}$ **B.** $\sqrt{x}$ **C.** $\sqrt{x^3}$ **D.** $\frac{1}{\sqrt{x}}$ **E.** $\frac{1}{\sqrt[3]{x^2}}$

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*pr***ACT***ice* 175

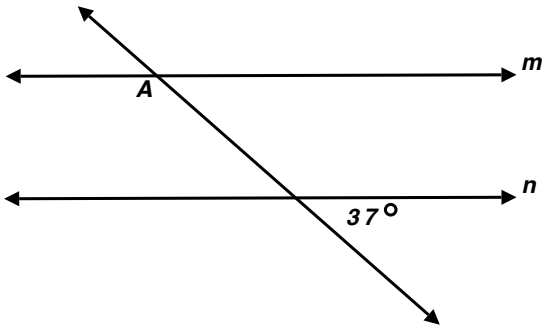
1. Let p and q be two parallel lines. If the slope of p is $\frac{1}{3}$. What is the sum of the slopes of the lines p and q?

A. $\frac{-3}{5}$ **B.** $\frac{2}{3}$ **C.** 0 **D.** $\frac{3}{2}$ **E.** $-\frac{3}{2}$

2. What is the least common multiple of 20, 90, and 15?

A. 300 **B.** 180 **C.** 270 **D.** 1800 **E.** 27000

3. Lines m and n are parallel. What is the measure of angle A in the picture below?



A. 143° **B.** 132° **C.** 88° **D.** 23° **E.** 17°

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*pr***ACT***ice* 176

1. $\frac{\sin 45^\circ}{\cos 45^\circ} = ?$

A. $\sin 45^\circ$ **B.** $\frac{\sqrt{2}}{2}$ **C.** 1 **D.** $\tan(1^\circ)$ **E.** $\cos 45^\circ$

2. Which of the following numbers expresses c in terms of a for all real numbers $a, b,$and c, such that $a^3 = b$ and $b^6 = c$?

A. $c = a^{\frac{1}{2}}$ **B.** $c = \sqrt[3]{a^6}$ **C.** $c = a^3$ **D.** $c = a^9$ **E.** $c = a^{18}$

3. What is the mode of the following 6 test scores?

$$54, 69, 82, 64, 64, 89$$

A. 58 **B.** 70.3 **C.** 64 **D.** 72.1 **E.** 80

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*pr***ACT***ice* 177

1. If $f(x) = x^2 + 2x + 3$. Then $f(x+y) =$?

A. $x^2 + 2x + 3 + y$ **B.** $(x+y)^2$

C. $x^2 + 2xy + y^2$ **D.** $x^2 + y^2 + 2x + 2y + 2xy + 3$

E. $x^2 + y^2 + 4xy + 3$

2. If $x = -2$, what is the value of $2x^2y + 3xy + 4 =$?

A. 6 **B.** $2y + 4$ **C.** 18 **D.** $4y + 4$ **E.** $-2y + 4$

3. Which of the following is the equivalent to the following expression?

$$t + t^2(t + t + t + t)$$

A. $5t^3$ **B.** $16t^4 + t$ **C.** t^7 **D.** $5t^2$ **E.** $4t^3 + t$

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*pr***ACT***ice* 178

1. What is $0.\overline{999}$ written as a fraction?

A. $\frac{9}{10}$ **B.** $\frac{999}{1000}$ **C.** $\frac{9}{100}$ **D.** $\frac{7}{8}$ **E.** 1

2. What must be true about two circles with the same center and different radii?

A. Both circles have the same radius.

B. The circles never intersect.

C. The circles intersect at exactly two different points.

D. The circles form a cylinder.

E. The circles intersect at infinitely many points.

3. How many radians is 30°?

A. $\frac{\pi}{3}$ **B.** $\frac{\pi}{4}$ **C.** $\frac{\pi}{6}$ **D.** 1 **E.** $\frac{1}{3}$

*pr***ACT***ice* 179

1. In 3−dimensional space, the set of all points 10 units from the origin is:

A. a line **B.** a cylinder **C.** a parabola **D.** a sphere

E. 2 parallel lines

2. What angle is complementary to 50°?

A. 130° **B.** 90° **C.** 50° **D.** 40° **E.** 25°

3. An ACT practice page has 3 math problems on it. There are 5 choices for each question. In total, how many possible solutions are there to each page?

A. 15 **B.** 30 **C.** 60 **D.** 125 **E.** 500

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*pr***ACT***ice* 180

1. If $\sin x = \frac{1}{5}$ and $\cos x = \frac{3}{5}$, then $\tan x =$?

A. $\frac{4}{5}$ **B.** $\frac{1}{3}$ **C.** $\frac{2}{3}$ **D.** $\frac{2}{5}$ **E.** 3

2. Simplify $\frac{\cos\theta}{\sin^2\theta+\cos^2\theta}$.

A. $\sin\theta$ **B.** $\cos\theta$ **C.** $\tan\theta$ **D.** $\sec\theta$ **E.** $\csc\theta$

3. Simplify $\frac{1+\cot^2 x}{\csc x}$.

A. 1 **B.** $\sin x$ **C.** $\cos x$ **D.** $\tan x$ **E.** $\sec x$

Answers to *pr*ACT*ice* problems

*pr***ACT***ice* 1 answers: 1. C, 2. B, 3. E

*pr***ACT***ice* 2 answers: 1. B, 2. E, 3. A

*pr***ACT***ice* 3 answers: 1. D, 2. A, 3. D

*pr***ACT***ice* 4 answers: 1. B, 2. E, 3. D

*pr***ACT***ice* 5 answers: 1. A, 2. C, 3. C

*pr***ACT***ice* 6 answers: 1. E, 2. D, 3. B

*pr***ACT***ice* 7 answers: 1. D, 2. C, 3. A

*pr***ACT***ice* 8 answers: 1. E, 2. D, 3. A

*pr***ACT***ice* 9 answers: 1. B, 2. D, 3. A

*pr***ACT***ice* 10 answers: 1. C, 2. D, 3. C

*pr***ACT***ice* 11 answers: 1. E, 2. D, 3. A

*pr***ACT***ice* 12 answers: 1. A, 2. C, 3. E

*pr***ACT***ice* 13 answers: 1. B, 2. D, 3. C

*pr***ACT***ice* 14 answers: 1. A, 2. B, 3. D

*pr***ACT***ice* 15 answers: 1. C, 2. A, 3. E

*pr***ACT***ice* 16 answers: 1. D, 2. A, 3. B

*pr***ACT***ice* 17 answers: 1. A, 2. D, 3. D

*pr***ACT***ice* 18 answers: 1. B, 2. E, 3. B

*pr***ACT***ice* 19 answers: 1. C, 2. D, 3. B

*pr***ACT***ice* 20 answers: 1. A, 2. E, 3. D

*pr***ACT***ice* 21 answers: 1. D, 2. A, 3. B

*pr***ACT***ice* 22 answers: 1. E, 2. A, 3. D

*pr***ACT***ice* 23 answers: 1. C, 2.D, 3. E

*pr***ACT***ice* 24 answers: 1. D, 2. E, 3. B

*pr***ACT***ice* 25 answers: 1. B, 2.A, 3. B

*pr***ACT***ice* 26 answers: 1. A, 2. B, 3. E

*pr***ACT***ice* 27 answers: 1. A, 2.D, 3. E

*pr***ACT***ice* 28 answers: 1. C, 2. E, 3. A

*pr***ACT***ice* 29 answers: 1. E, 2.B, 3. D

*pr***ACT***ice* 30 answers: 1. D, 2. D, 3. A

*pr***ACT***ice* 31 answers: 1. B, 2.B, 3. C

*pr***ACT***ice* 32 answers: 1. E, 2. B, 3. B

*pr***ACT***ice* 33 answers: 1. A, 2.E, 3. B

*pr***ACT***ice* 34 answers: 1. D, 2. A, 3. B

*pr***ACT***ice* 35 answers: 1. E, 2.D, 3. D

*pr***ACT***ice* 36 answers: 1. D, 2. C, 3. A

*pr***ACT***ice* 37 answers: 1. A, 2.E, 3. C

*pr***ACT***ice* 38 answers: 1. C, 2. E, 3. B

*pr***ACT***ice* 39 answers: 1. B, 2. D, 3. A

*pr***ACT***ice* 40 answers: 1. C, 2. D, 3. C

*pr***ACT***ice* 41 answers: 1. D, 2. A, 3. B

*pr***ACT***ice* 42 answers: 1. E, 2. A, 3. D

*pr***ACT***ice* 43 answers: 1. A, 2.E, 3. B

*pr***ACT***ice* 44 answers: 1. D, 2. A, 3. B

*pr***ACT***ice* 45 answers: 1. C, 2. A, 3. E

*pr***ACT***ice* 46 answers: 1. B, 2. E, 3. B

*pr***ACT***ice* 47 answers: 1. B, 2. A, 3. B

*pr***ACT***ice* 48 answers: 1. E, 2. D, 3. A

*pr***ACT***ice* 49 answers: 1. D, 2. C, 3. A

*pr***ACT***ice* 50 answers: 1. C, 2. B, 3. A

*pr***ACT***ice* 51 answers: 1. A, 2. B, 3. D

*pr***ACT***ice* 52 answers: 1. E, 2. E, 3. E

*pr***ACT***ice* 53 answers: 1. D, 2.D, 3. C

*pr***ACT***ice* 54 answers: 1. C, 2. A, 3. B

*pr***ACT***ice* 55 answers: 1. B, 2. D, 3. D

*pr***ACT***ice* 56 answers: 1. E, 2. B, 3. D

*pr***ACT***ice* 57 answers: 1. B, 2. E, 3. C

*pr***ACT***ice* 58 answers: 1. A, 2. E, 3. C

*pr***ACT***ice* 59 answers: 1. B, 2. D, 3. A

*pr***ACT***ice* 60 answers: 1. D, 2. B, 3. D

*pr***ACT***ice* 61 answers: 1. E, 2. C, 3. D

*pr***ACT***ice* 62 answers: 1. A, 2. E, 3. A

*pr***ACT***ice* 63 answers: 1. D, 2. C, 3. B

*pr***ACT***ice* 64 answers: 1. C, 2. E, 3. A

*pr***ACT***ice* 65 answers: 1. B, 2. B, 3. E

*pr***ACT***ice* 66 answers: 1. C, 2. A, 3. C

*pr***ACT***ice* 67 answers: 1. A, 2.B, 3. C

*pr***ACT***ice* 68 answers: 1. E, 2. D, 3. C

*pr***ACT***ice* 69 answers: 1. B, 2. D, 3. C

*pr***ACT***ice* 70 answers: 1. A, 2. C, 3. D

*pr***ACT***ice* 71 answers: 1. D, 2. B, 3. A

*pr***ACT***ice* 72 answers: 1. B, 2. E, 3. D

*pr***ACT***ice* 73 answers: 1. A, 2. D, 3. D

*pr***ACT***ice* 74 answers: 1. E, 2. A, 3. B

*pr***ACT***ice* 75 answers: 1. D, 2. C, 3. E

*pr***ACT***ice* 76 answers: 1. B, 2. A, 3. C

*pr***ACT***ice* 77 answers: 1. A, 2.B, 3. A

*pr***ACT***ice* 78 answers: 1. E, 2. D, 3. D

*pr***ACT***ice* 79 answers: 1. E, 2. D, 3. C

*pr***ACT***ice* 80 answers: 1. A, 2. C, 3. E

*pr***ACT***ice* 81 answers: 1. D, 2. A, 3. B

*pr***ACT***ice* 82 answers: 1. E, 2. A, 3. D

*pr***ACT***ice* 83 answers: 1. C, 2.D, 3. E

*pr***ACT***ice* 84 answers: 1. D, 2. E, 3. C

*pr***ACT***ice* 85 answers: 1. B, 2.A, 3. B

*pr***ACT***ice* 86 answers: 1. A, 2. B, 3. E

*pr***ACT***ice* 87 answers: 1. E, 2.D, 3. E

*pr***ACT***ice* 88 answers: 1. C, 2. E, 3. A

*pr***ACT***ice* 89 answers: 1. E, 2.B, 3. D

*pr***ACT***ice* 90 answers: 1. D, 2. D, 3. A

*pr***ACT***ice* 91 answers: 1. B, 2. C, 3. B

*pr***ACT***ice* 92 answers: 1. D, 2. C, 3. C

*pr***ACT***ice* 93 answers: 1. E, 2. C, 3. E

*pr***ACT***ice* 94 answers: 1. A, 2. A, 3. C

*pr***ACT***ice* 95 answers: 1. C, 2. B, 3. C

*pr***ACT***ice* 96 answers: 1. D, 2. E, 3. C

*pr***ACT***ice* 97 answers: 1. C, 2. D, 3, B

*pr***ACT***ice* 98 answers: 1. B, 2. B, 3. C

*pr***ACT***ice* 99 answers: 1. D, 2. E, 3. A

*pr***ACT***ice* 100 answers: 1. D, 2. D, 3. B

*pr***ACT***ice* 101 answers: 1. E, 2. D, 3. C

*pr***ACT***ice* 102 answers: 1. C, 2. D, 3. A

*pr***ACT***ice* 103 answers: 1. B, 2. D, 3. C

*pr***ACT***ice* 104 answers: 1. A, 2. A, 3. B

*pr***ACT***ice* 105 answers: 1. B, 2. C, 3. A

*pr***ACT***ice* 106 answers: 1. E, 2. E, 3. D

*pr***ACT***ice* 107 answers: 1. D, 2. B, 3. B

*pr***ACT***ice* 108 answers: 1. E, 2. C, 3. D

*pr***ACT***ice* 109 answers: 1. A, 2. B, 3. D

*pr***ACT***ice* 110 answers: 1. A, 2. A, 3. D

*pr***ACT***ice* 111 answers: 1. C, 2. C, 3. A

*pr***ACT***ice* 112 answers: 1. E, 2. E, 3. D

*pr***ACT***ice* 113 answers: 1. D, 2. C, 3. D

*pr***ACT***ice* 114 answers: 1. B, 2. D, 3. C

*pr***ACT***ice* 115 answers: 1. C, 2. A, 3. D

*pr***ACT***ice* 116 answers: 1. D, 2. E, 3. D

*pr***ACT***ice* 117 answers: 1. D, 2. B, 3. B

*pr***ACT***ice* 118 answers: 1. B, 2. C, 3. A

*pr***ACT***ice* 119 answers: 1. A, 2. A, 3. A

*pr***ACT***ice* 120 answers: 1. B, 2. D, 3. C

*pr***ACT***ice* 121 answers: 1. A, 2. C, 3. C

*pr***ACT***ice* 122 answers: 1. D, 2. B, 3. C

*pr***ACT***ice* 123 answers: 1. D, 2. A, 3. C

*pr***ACT***ice* 124 answers: 1. E, 2. C, 3. C

*pr***ACT***ice* 125 answers: 1. D, 2. D, 3. E

*pr***ACT***ice* 126 answers: 1. D, 2. E, 3. B

*pr***ACT***ice* 127 answers: 1. B, 2. C, 3. C

*pr***ACT***ice* 128 answers: 1. E, 2. C, 3. D

*pr***ACT***ice* 129 answers: 1. A, 2. E, 3. C

*pr***ACT***ice* 130 answers: 1. C, 2. C, 3. D

*pr***ACT***ice* 131 answers: 1. D, 2. A, 3. D

*pr***ACT***ice* 132 answers: 1. D, 2. D, 3. C

*pr***ACT***ice* 133 answers: 1. B, 2. B, 3. A

*pr***ACT***ice* 134 answers: 1. B, 2. A, 3. E

*pr***ACT***ice* 135 answers: 1. B, 2. D, 3. B

*pr***ACT***ice* 136 answers: 1. B, 2. D, 3. C

*pr***ACT***ice* 137 answers: 1. B, 2. E, 3. B

*pr***ACT***ice* 138 answers: 1. C, 2. D, 3. B

*pr***ACT***ice* 139 answers: 1. C, 2. A, 3. D

*pr***ACT***ice* 140 answers: 1. B, 2. D, 3. C

*pr***ACT***ice* 141 answers: 1. E, 2. D, 3. A

*pr***ACT***ice* 142 answers: 1. C, 2. B, 3. A

*pr***ACT***ice* 143 answers: 1. D, 2. B, 3. D

*pr***ACT***ice* 144 answers: 1. A, 2. D, 3. D

*pr***ACT***ice* 145 answers: 1. E, 2. D, 3. A

*pr***ACT***ice* 146 answers: 1. C, 2. C, 3. E

*pr***ACT***ice* 147 answers: 1. C, 2. D, 3. A

*pr***ACT***ice* 148 answers: 1. B, 2. D, 3. C

*pr***ACT***ice* 149 answers: 1. B, 2. D, 3. C

*pr***ACT***ice* 150 answers: 1. D, 2. B, 3. D

*pr***ACT***ice* 151 answers: 1. A, 2. C, 3. E

*pr***ACT***ice* 152 answers: 1. D, 2. E, 3. C

*pr***ACT***ice* 153 answers: 1. D, 2. A, 3. E

*pr***ACT***ice* 154 answers: 1. D, 2. B, 3. B

*pr***ACT***ice* 155 answers: 1. C, 2. B, 3. C

*pr***ACT***ice* 156 answers: 1. D, 2. E, 3. D

*pr***ACT***ice* 157 answers: 1. B, 2. D, 3. C

*pr***ACT***ice* 158 answers: 1. D, 2. E, 3. E

*pr***ACT***ice* 159 answers: 1. B, 2. E, 3. D

*pr***ACT***ice* 160 answers: 1. B, 2. B, 3. D

*pr***ACT***ice* 161 answers: 1. D, 2. B, 3. E

*pr***ACT***ice* 162 answers: 1. D, 2. A, 3. B

*pr***ACT***ice* 163 answers: 1. A, 2. C, 3. B

*pr***ACT***ice* 164 answers: 1. C, 2. D, 3. C

*pr***ACT***ice* 165 answers: 1. C, 2. C, 3. A

*pr***ACT***ice* 166 answers: 1. C, 2. D, 3. A

*pr***ACT***ice* 167 answers: 1. C, 2. D, 3. D

*pr***ACT***ice* 168 answers: 1. B, 2. A, 3. C

*pr***ACT***ice* 169 answers: 1. B, 2. D, 3. C

*pr***ACT***ice* 170 answers: 1. B, 2. B, 3. A

*pr***ACT***ice* 171 answers: 1. C, 2. D, 3. D

*pr***ACT***ice* 172 answers: 1. A, 2. D, 3. C

*pr***ACT***ice* 173 answers: 1. C, 2. B, 3. C

*pr***ACT***ice* 174 answers: 1. E, 2. C, 3. B

*pr***ACT***ice* 175 answers: 1. B, 2. B, 3. A

*pr***ACT***ice* 176 answers: 1. B, 2. E, 3. C

*pr***ACT***ice* 177 answers: 1. D, 2. B, 3. E

*pr***ACT***ice* 178 answers: 1. E, 2. B, 3. C

*pr***ACT***ice* 179 answers 1. D, 2. D, 3. D

*pr***ACT***ice* 180 answers: 1. B, 2. B, 3. A