

Company C produces toy trucks at a cost of \$5.00 each for the first 100 trucks and \$3.50 for each additional truck. If 500 toy trucks were produced by Company C and sold for \$10.00 each, what was Company C's gross profit?

- ☐ \$2,250
- ☐ \$2,500
- ☐ \$3,100
- ☐ \$3,250
- ☐ \$3,500

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- ☒ \$3,100
- ☐ \$3,250
- ☐ \$3,500

Cost $\rightarrow \$5 \times 100 = \$500$

$\$3.5 \times 400 = \$1400$

\$1900

Sell $\rightarrow \$10 \times 500 = \$5000$

$-\$1900$

\$3100

The value of Maureen's investment portfolio has decreased by 5.8 percent since her initial investment in the portfolio. If her initial investment was \$16,800, what is the current value of the portfolio?

- ☐ \$7,056.00
- ☐ \$14,280.00
- ☐ \$15,825.60
- ☐ \$16,702.56
- ☐ \$17,774.40

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$$\$16,800 \times \frac{94.2}{100} = 15825.6$$

The toll T , in dollars, for a truck using a certain bridge is given by the formula $T = 1.50 + 0.50(x - 2)$, where x is the number of axles on the truck. What is the toll for an 18-wheel truck that has 2 wheels on its front axle and 4 wheels on each of its other axles?

- ☐ \$2.50
- ☐ \$3.00
- ☐ \$3.50
- ☐ \$4.00
- ☐ \$5.00

The toll T , in dollars, for a truck using a certain bridge is given by the formula $T = 1.50 + 0.50(x - 2)$, where x is the number of axles on the truck. What is the toll for an 18-wheel truck that has 2 wheels on its front axle and 4 wheels on each of its other axles?

☐ \$2.50

☒ \$3.00

☐ \$3.50

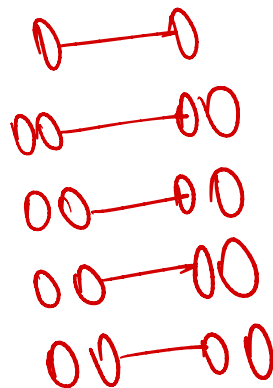
☐ \$4.00

☐ \$5.00

$$T = 1.5 + 0.5(x - 2)$$

18 wheel $\left\{ \begin{array}{l} 2 \text{ front} \\ 4 \text{ others} \end{array} \right.$

$$x = 5; \quad T = 1.5 + 0.5(3)$$
$$T = \$3$$



In a certain history class of 17 juniors and seniors, each junior has written 2 book reports and each senior has written 3 book reports. If the 17 students have written a total of 44 book reports, how many juniors are in the class?

- ☐ 7
- ☐ 8
- ☐ 9
- ☐ 10
- ☐ 11

In a certain history class of 17 juniors and seniors, each junior has written 2 book reports and each senior has written 3 book reports. If the 17 students have written a total of 44 book reports, how many juniors are in the class?

☒ 7

☐ 8

☐ 9

☐ 10

☐ 11

$$J + S = 17 \quad (\times 3)$$

$$2J + 3S = 44$$

$$\begin{array}{r} 3J + 3S = 51 \\ - \quad 2J + 3S = 44 \\ \hline J = 7 \end{array}$$

What values of x have a corresponding value of y that satisfies both $xy > 0$ and $xy = x + y$?

- ☐ $x \leq -1$
- ☐ $-1 < x \leq 0$
- ☐ $0 < x \leq 1$
- ☐ $x > 1$
- ☐ All real numbers

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- ☒ $x > 1$
- ☐ All real numbers

$$xy > 0$$

$$\begin{array}{c} + + \\ 0 \\ - - \end{array}$$

$$xy = x + y > 0$$

$$\begin{array}{c} + + \\ 0 \\ - - \end{array}$$

$$x > 0 ; y > 0$$

$$xy = x + y$$

$$xy - y = x$$

$$y(x - 1) = x$$

$$y = \frac{x}{x-1} \begin{array}{c} \rightarrow + \\ \rightarrow + \end{array} \rightarrow \begin{array}{c} x-1 > 0 \\ x > 1 \end{array}$$

If k is a positive even integer, which of the following must be an odd integer?

I. $k^2 - 3k + 4$

II. $k^5 + 3$

III. $7k - 7$

- ☐ II only
- ☐ III only
- ☐ I and III only
- ☐ II and III only
- ☐ I, II, and III

If k is a positive even integer, which of the following must be an odd integer?

I. $k^2 - 3k + 4 = E - E + E = E \quad \times$

II. $k^5 + 3 = E + 0 = O \quad \checkmark$

III. $7k - 7 = E - 0 = O \quad \checkmark$

☐ II only

☐ III only

☐ I and III only

☒ II and III only

☐ I, II, and III

$k = \text{even}$

If $x \neq -\frac{1}{2}$, then $\frac{6x^3 + 3x^2 - 8x - 4}{2x + 1} =$

☐ $3x^2 + \frac{3}{2}x - 8$

☐ $3x^2 + \frac{3}{2}x - 4$

☐ $3x^2 - 4$

☐ $3x - 4$

☐ $3x + 4$

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☐ $3x^2 + \frac{3}{2}x - 8$

☐ $3x^2 + \frac{3}{2}x - 4$

☒ $3x^2 - 4$

☐ $3x - 4$

☐ $3x + 4$

$$\frac{3x^2(2x+1) - 4(2x+1)}{(2x+1)} =$$

$$= 3x^2 - 4$$

A certain work plan for September requires that a work team, working every day, produce an average of 200 items per day. For the first half of the month, the team produced an average of 150 items per day. How many items per day must the team average during the second half of the month if it is to attain the average daily production rate required by the work plan?

- ☐ 225
- ☐ 250
- ☐ 275
- ☐ 300
- ☐ 350

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☐ 225

☒ 250

☐ 275

☐ 300

☐ 350

$$200(30) = 150(15) + 15n$$

$$6000 = 2250 + 15n$$

$$15n = 3750$$

$$n = 250$$

If a equals the sum of the even integers from 2 to 20, inclusive, and b equals the sum of the odd integers from 1 to 19, inclusive, what is the value of $a - b$?

- ☐ 1
- ☐ 10
- ☐ 19
- ☐ 20
- ☐ 21

If a equals the sum of the even integers from 2 to 20, inclusive, and b equals the sum of the odd integers from 1 to 19, inclusive, what is the value of $a - b$?

☐ 1

☒ 10

☐ 19

☐ 20

☐ 21

$$\begin{array}{r} 2 + 4 + 6 + \dots + 18 + 20 \\ - 1 + 3 + 5 + \dots + 17 + 19 \\ \hline 1 + 1 + 1 + \dots + 1 + 1 = 10 \end{array}$$

There are five sales agents in a certain real estate office. One month Andy sold twice as many properties as Ellen, Bob sold 3 more than Ellen, Cary sold twice as many as Bob, and Dora sold as many as Bob and Ellen together. Who sold the most properties that month?

- ☐ Andy
- ☐ Bob
- ☐ Cary
- ☐ Dora
- ☐ Ellen

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☐ Andy

☐ Bob

☒ Cary

☐ Dora

☐ Ellen

20 10

$$A = 2E$$

$$B = E + 3$$

$$C = 2B$$

$$D = B + E$$

23 13 10

$$E = 10$$

$$A = 20$$

$$B = 13$$

$$C = 26$$

$$D = 23$$

Stephanie has $2\frac{1}{4}$ cups of milk on hand and makes 2 batches of cookies, using $\frac{2}{3}$ cup of milk for each batch of cookies. Which of the following describes the amount of milk remaining after she makes the cookies?

- ☐ Less than $\frac{1}{2}$ cup
- ☐ Between $\frac{1}{2}$ cup and $\frac{3}{4}$ cup
- ☐ Between $\frac{3}{4}$ cup and 1 cup
- ☐ Between 1 cup and $1\frac{1}{2}$ cups
- ☐ More than $1\frac{1}{2}$ cups

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- ☐ Between 1 cup and $1\frac{1}{2}$ cups
- ☐ More than $1\frac{1}{2}$ cups

cups	batches
$\frac{2}{3}$	1
$\frac{4}{3}$	2

$$2\frac{1}{4} - \frac{4}{3} = \frac{9}{4} - \frac{4}{3} =$$
$$= \frac{27 - 16}{12} = \frac{11}{12}$$

The sum S of the first n consecutive positive even integers is given by $S = n(n + 1)$. For what value of n is this sum equal to 110 ?

- ☐ 10
- ☐ 11
- ☐ 12
- ☐ 13
- ☐ 14

The sum S of the first n consecutive positive even integers is given by $S = n(n + 1)$. For what value of n is this sum equal to 110 ?

☒ 10

☐ 11

☐ 12

☐ 13

☐ 14

$$n(n+1) = 110$$

$$(10)(11)$$

$$\hookrightarrow n$$

A company sells radios for \$15.00 each. It costs the company \$14.00 per radio to produce 1,000 radios and \$13.50 per radio to produce 2,000 radios. How much greater will the company's gross profit be from the production and sale of 2,000 radios than from the production and sale of 1,000 radios?

- ☐ \$500
- ☐ \$1,000
- ☐ \$1,500
- ☐ \$2,000
- ☐ \$2,500

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- ☐ \$500
- ☐ \$1,000
- ☐ \$1,500
- ☒ \$2,000
- ☐ \$2,500

$$\begin{array}{lcl} \text{Sell} \rightarrow \$15 & \left\{ \begin{array}{l} 1000 = \$15000 \\ 2000 = \$30000 \end{array} \right. & \$1000 \\ \text{Cost} \rightarrow \$14 \times 1000 = \$14000 & & \\ \rightarrow \$13.5 \times 2000 = \$27000 & & \$3000 \end{array}$$

$$\$3000 - \$1000 = \$2000$$

List S consists of the positive integers that are multiples of 9 and are less than 100. What is the median of the integers in S ?

☐ 36

☐ 45

☐ 49

☐ 54

☐ 63

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☐ 36

☐ 45

☐ 49

☒ 54

☐ 63

$$2 \times 1 = 2$$

$$2 \times 11 = 22$$

$$\rightarrow \begin{array}{r} 11 \\ - 1 \\ \hline 10 \end{array} + 1 = \frac{11 + 1}{2} = 6^{th}$$

$$9 \times 6 = 54$$

$$6(87.30 + 0.65) - 5(87.30) =$$

☐ 3.90

☐ 39.00

☐ 90.90

☐ 91.20

☐ 91.85

$$6(87.30 + 0.65) - 5(87.30) =$$

☐ 3.90

☐ 39.00

☐ 90.90

☒ 91.20

☐ 91.85

$$\begin{aligned} &6(87.30) + 6(0.65) - 5(87.30) = \\ &= 87.30(6 - 5) + 6(0.65) = \\ &= 87.30 + 3.9 = 91.20 \end{aligned}$$

In a field day at a school, each child who competed in n events and scored a total of p points was given an overall score of $\frac{p}{n} + n$. Andrew competed in 1 event and scored 9 points. Jason competed in 3 events and scored 5, 6, and 7 points, respectively. What was the ratio of Andrew's overall score to Jason's overall score?

☐ $\frac{10}{23}$

☐ $\frac{7}{10}$

☐ $\frac{4}{5}$

☐ $\frac{10}{9}$

☐ $\frac{12}{7}$

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☐ $\frac{10}{23}$

☐ $\frac{7}{10}$

☐ $\frac{4}{5}$

☒ $\frac{10}{9}$

☐ $\frac{12}{7}$

$$\frac{p}{n} + n$$

n events
 p points

$$A \rightarrow \frac{9}{1} + 1 = 10$$

$$J \rightarrow \frac{5+6+7}{3} + 3 = 9$$

Beth, Naomi, and Juan raised a total of \$55 for charity. Naomi raised \$5 less than Juan, and Juan raised twice as much as Beth. How much did Beth raise?

- ☐ \$9
- ☐ \$10
- ☐ \$12
- ☐ \$13
- ☐ \$15

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☐ \$9

☐ \$10

☒ \$12

☐ \$13

☐ \$15

$$B + N + J = 55$$

$$B + 2B - 5 + 2B = 55 \rightarrow 5B = 60, B = 12$$

$$N = J - 5 \rightarrow N = 2B - 5$$

$$J = 2B$$

$$\frac{1 + 0.0001}{0.04 + 10}$$

The value of the expression above is closest to which of the following?

- ☐ 0.0001
- ☐ 0.001
- ☐ 0.1
- ☐ 1
- ☐ 10

$$\frac{1 + 0.0001}{0.04 + 10}$$

The value of the expression above is closest to which of the following?

- ☐ 0.0001
- ☐ 0.001
- ☒ 0.1
- ☐ 1
- ☐ 10

$$\frac{1 + 0.0001}{0.04 + 10} = \frac{1}{10} = 0.1$$

If $x = -\frac{5}{8}$ and $y = -\frac{1}{2}$, what is the value of the expression $-2x - y^2$?

☐ $-\frac{3}{2}$

☐ -1

☐ 1

☐ $\frac{3}{2}$

☐ $\frac{7}{4}$

If $x = -\frac{5}{8}$ and $y = -\frac{1}{2}$, what is the value of the expression $-2x - y^2$?

☐ $-\frac{3}{2}$

☐ -1

☒ 1

☐ $\frac{3}{2}$

☐ $\frac{7}{4}$

$$-2\left(-\frac{5}{8}\right) - \left(-\frac{1}{2}\right)^2 =$$

$$= \frac{5}{4} - \frac{1}{4} = 1$$

Company X mailed out a questionnaire and 60 percent of those who received the questionnaire by mail responded. Company X needed 300 responses. What is the minimum number of questionnaires that Company X should have mailed in order to get the necessary responses?

- ☐ 400
- ☐ 420
- ☐ 480
- ☐ 500
- ☐ 600

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☐ 400

☐ 420

☐ 480

☒ 500

☐ 600

$$\begin{array}{ccc} \% & \text{responses} & \\ 60 & 300 & \\ 100 & y & \end{array}$$

$$y = \frac{100 \times 300}{60} = 500$$

Of the following, which is least?

☐ $\frac{0.03}{0.00071}$

☐ $\frac{0.03}{0.0071}$

☐ $\frac{0.03}{0.071}$

☐ $\frac{0.03}{0.71}$

☐ $\frac{0.03}{7.1}$

Of the following, which is least?

☐ $\frac{0.03}{0.00071}$

☐ $\frac{0.03}{0.0071}$

☐ $\frac{0.03}{0.071}$

☐ $\frac{0.03}{0.71}$

☒ $\frac{0.03}{7.1}$

largest denominator
same numerator

A certain grocery purchased x pounds of produce for p dollars per pound. If y pounds of the produce had to be discarded due to spoilage and the grocery sold the rest for s dollars per pound, which of the following represents the gross profit on the sale of the produce?

☐ $(x - y)s - xp$

☐ $(x - y)p - ys$

☐ $(s - p)y - xp$

☐ $xp - ys$

☐ $(x - y)(s - p)$

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☒ $(x - y)s - xp$

☐ $(x - y)p - ys$

☐ $(s - p)y - xp$

☐ $xp - ys$

☐ $(x - y)(s - p)$

Cost $\rightarrow xp$

Sell $\rightarrow s(x - y)$

Profit $= s(x - y) - xp$

Three people each contributed x dollars toward the purchase of a car. They then bought the car for y dollars, an amount less than the total number of dollars contributed. If the excess amount is to be refunded to the three people in equal amounts, each person should receive a refund of how many dollars?

☐ $\frac{3x - y}{3}$

☐ $\frac{x - y}{3}$

☐ $\frac{x - 3y}{3}$

☐ $\frac{y - 3x}{3}$

☐ $3(x - y)$

Three people each contributed x dollars toward the purchase of a car. They then bought the car for y dollars, an amount less than the total number of dollars contributed. If the excess amount is to be refunded to the three people in equal amounts, each person should receive a refund of how many dollars?

☒ $\frac{3x - y}{3}$

☐ $\frac{x - y}{3}$

☐ $\frac{x - 3y}{3}$

☐ $\frac{y - 3x}{3}$

☐ $3(x - y)$

$$\frac{3x - y}{3}$$

$$3r \leq 4s + 5$$
$$|s| \leq 5$$

Given the inequalities above, which of the following CANNOT be the value of r ?

- ☐ -20
- ☐ -5
- ☐ 0
- ☐ 5
- ☐ 20

$$3r \leq 4s + 5$$
$$|s| \leq 5$$

Given the inequalities above, which of the following CANNOT be the value of r ?

- ☐ -20
- ☐ -5
- ☐ 0
- ☐ 5
- ☒ 20

$$-5 \leq s \leq 5$$

$$3r \leq 4(5) + 5$$

$$3r \leq 25$$

$$r \leq 8\ldots$$

Next month, Ron and Cathy will each begin working part-time at $\frac{3}{5}$ of their respective current salaries. If the sum of their reduced salaries will be equal to Cathy's current salary, then Ron's current salary is what fraction of Cathy's current salary?

☐ $\frac{1}{3}$

☐ $\frac{2}{5}$

☐ $\frac{1}{2}$

☐ $\frac{3}{5}$

☐ $\frac{2}{3}$

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☐ $\frac{1}{3}$

☐ $\frac{2}{5}$

☐ $\frac{1}{2}$

☐ $\frac{3}{5}$

☒ $\frac{2}{3}$

$$\frac{3}{5}(R + C) = C$$

$$\frac{R}{C} = \frac{2}{3}$$

$$3R + 3C = 5C$$

$$3R = 2C$$

$$\begin{array}{cc} \downarrow & \downarrow \\ 1 & 2 \\ 2 & 3 \end{array}$$