1) The two polygons above are similar. What is the value of x?

Write a proportion:
\[
\frac{3.5}{2.8} = \frac{x}{5.2}
\]
Then, cross-multiply.
\[
2.8x = (3.5)(5.2)
\]
\[
2.8x = 18.2
\]
\[
x = 6.5
\]

2) Which point if connected to J or K will form a triangle congruent to triangle ABC? Choose all correct answers.

☒ b) W ☒ d) Y

3) If 7x + 6y = 15 and 4x − 6y = 18, what is the value of x?

a) 3

Line the equations up vertically:
\[
7x + 6y = 15
\]
\[
4x - 6y = 18
\]
Add the equations together.
\[
11x = 33
\]
\[
x = 3
\]
4) \( m^2 - k^2 \) is equivalent to which of the following?

c) \((m+k)(m-k)\)

Multiply the choices. Remember mk is the same thing as km.

a) \((m-k)(m-k) = m^2 - km - km + k^2 = m^2 - 2km + k^2\)

b) \((m+k)(m+k) = m^2 + km + km + k^2 = m^2 + 2km + k^2\)

c) \((m+k)(m-k) = m^2 + km - km + k^2 = m^2 - k^2\)

5) If the point in the graph above is reflected across the line \( x = 6 \) (not shown), what will be the coordinates of the new point?

d) \((1,5)\)
6) In the rectangle above, how much greater is the perimeter of triangle AED than the perimeter of triangle AEB?

c) 5

The diagonals of a rectangle are equal and they also bisect each other. Therefore, $AE = BE = DE = EC$. Let's call each of these $x$.

Perimeter of AED = $11 + x + x$
Perimeter of AEB = $6 + x + x$

So the perimeter of AED is $11 - 6$ or 5 greater than the perimeter of AED.

7) If $7(3x + y - 1) - 4(4x - 6y + 3) = jx + ky + m$, what is the value of $\frac{j}{k + m}$?

Express your answer as a fraction.

Distribute the 7 and the negative 4. Then “match up” the coefficients on the left side with the letters on the right side.

$7(3x + y - 1) - 4(4x - 6y + 3) = jx + ky + m$

$21x + 7y - 7 - 16x + 24y - 12$ Combine similar terms

$5x + 31y - 19 = jx + ky + m$

$j = 5, k = 31, m = -19$

$\frac{j}{k + m} = \frac{5}{31 - 19} = \frac{5}{12}$
8) On a map, 0.5 inches represents 3.5 miles. If a region has an area of 120 square miles, how many square inches would represent this on the map?

\[
\begin{align*}
\text{square inches} & \quad = \quad \text{square inches} \\
\text{square miles} & \quad \quad \quad \text{square miles} \\
(0.5)^2 & \quad = \quad \frac{x}{120} \\
(3.5)^2 & \quad = \quad \frac{x}{120} \\
0.25 & \quad = \quad \frac{x}{120} \\
12.25 \times 0.25 & \quad = \quad 120 \\
12.25x & \quad = \quad 30 \\
x & \quad = \quad \frac{30}{12.25} = 2.45
\end{align*}
\]

9) If the average of seven consecutive integers is 23, what is the largest integer?

\[
\begin{align*}
\text{Write out 7 blanks and put 23 in the middle.} \\
\hdots, \hdots, \hdots, 23, \hdots, \hdots, \hdots \\
20, 21, 22, 23, 24, 25, 26 \\
(I \text{ know that this shows 23 as the median but it will also be the average. Check it \& see!})
\end{align*}
\]

10) Which of the following lists the numbers above in increasing order?

\[
\begin{align*}
\sqrt{\frac{1}{16}}, \sqrt{\frac{1}{5}}, \frac{13}{45}, \frac{4}{19}, \pi \\
\sqrt{\frac{1}{16}} = 0.25 \\
\sqrt{\frac{1}{5}} = 0.45 \\
\frac{13}{45} = 0.29 \\
\frac{4}{19} = 0.21 \\
\pi = 3.14
\end{align*}
\]

\[
\text{The correct order = C.}
\]
11) The distance from J to L is the same as the distance from K to M. Find the value of x.

\[
\begin{align*}
4x + 90 &= 120 \\
4x &= 30 \\
x &= 7.5
\end{align*}
\]

e) 7.5

12) In a group of 55 students with all different ages, the median age is 24. How many students are older than 24?

b) 27

\[
\begin{align*}
\underline{24} \\
\text{One student is in the middle. } 55 - 1 = 54. \\
\text{Half will be older than 24. Half of 54 = 27.}
\end{align*}
\]

13) In the number 99929.929, the 2 to the left of the decimal has a greater place value than the place value of the 2 to the right of the decimal point. How many times greater?

d) 1000

\[
\begin{align*}
The 2 to the left of the decimal has a value of 20. \\
The 2 to the right of the decimal has a value of .02. \\
20 \div .02 = 1000 \text{ so it is 1000 times greater.}
\end{align*}
\]
14) Lydia found that 1 liter of gas would allow her to ride 40 km on her motorcycle. If a liter of gas costs $1.45, approximately how far can she travel for $8?

c) $220.7

\[
\frac{\text{cost}}{\text{distance}} = \frac{\text{cost}}{\text{distance}} \\
1.45 \cdot \frac{8}{40} = x \\
1.45x = 8(40) \\
1.45x = 320 \\
x = 220.7
\]

15) .455 is how much greater than \(\frac{2}{5}\)?

a) \(\frac{11}{200}\)

\[
\frac{2}{5} = .4 \\
.455 - .400 = .055 \\
.055 = \frac{55}{1000} \\
\text{which reduces to } \frac{11}{200}
\]

16) What is the area of the triangle above in square meters?

d) 120

\[
\text{Area of a triangle} = \frac{1}{2}bh \\
\text{First, find the base of the triangle:} \\
a^2 + b^2 = c^2 \\
10^2 + b^2 = 26^2 \\
100 + b^2 = 676 \\
b^2 = 576 \\
b = \sqrt{576} = 24 \\
\text{Area} = \frac{1}{2} (24)(10) = 120
\]

Shortcut: The triangle is a multiple of the famous 5 - 12 - 13 triangle. Multiply each number by 2 to get 10 - 24 - 26. (You can find the base is 24 much faster this way.)
17) \( 3^4 \times 18^3 \) is equivalent to which of the following?

b) \( 3^{10} \times 2^3 \)

You can multiply each out to see which one is equal or...

\[ 3^4 \times 18^3 = 3^4 \times (9 \cdot 2)^3 = 3^4 \times (3^2 \cdot 2^1)^3 = 3^4 \times (3^6 \cdot 2^3) = 3^{10} \times 2^3 \]

replace 18 with 9 \( \cdot \) 2 then replace 9 with 3 \( \cdot \) 2

Rules: When you raise a power to a power, you multiply the powers.

Ex. \( (3^2)^3 = 3^6 \)

When multiplying, we add the powers.

Ex. \( 3^4 \cdot 3^6 = 3^{10} \)

18) Point Q in the number line above corresponds to which of the following numbers?

b) \(-4 \frac{3}{5}\)

The number is between -4 and -5.
Therefore, it can only be choice b or c.
The point is closer to -5 than it is to -4 so the answer must be "b".

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19) Which equation represents the numbers in the above table?

d) \( R = 12.7P \)

Just “plug” the numbers into the equations until you find the one that works for all points.

\[ R = 12.7P \]

\( 0 = 12.7(0) \)

\( 0 = 0 \)

\( 101.6 = 12.7(8) \)

\( 101.6 = 101.6 \)

\( 165.1 = 12.7(13) \)

\( 165.1 = 165.1 \)
20) After following the step listed below, the result is 38. What is the value of K?

Step 1: Take K
Step 2: Multiply by 3
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Step 4: Divide by 2

Just reverse the process starting from the bottom and working up.
Start with the result of 38 and multiply by 2. \((38)(2) = 76\)
Then subtract 19 from 76. \(76 - 19 = 57\).
Finally, divide by 3. \(57/3 = 19\).

The answer is \(19\). \(Yes, the number 19 also appears in the problem. They like to do that to make it more confusing!\)

21) Given that each square represents 5 square inches, which of the following is the area of the shaded region?

d) 45

7 squares + 4(halves) = 9 total squares
\(9 \times 5 = 45\)

22) In a class of 30 students, 10 are freshmen and 4 are juniors. What is the probability that the professor will call on a student who is not a freshman or a junior?

b) \(\frac{8}{15}\)

\[
\text{Probability } \text{not a freshman or junior} = \frac{30 - 10 - 4}{30} = \frac{16}{30} = \frac{8}{15}
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Then, cross-multiply.

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\[ 2.8x = 18.2 \]

\[ x = 6.5 \]

c) 6.5

2) Which point if connected to J or K will form a triangle congruent to triangle ABC? Choose all correct answers.

\[ \text{\ding{255} b) W \quad \text{\ding{255} d) Y} } \]

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Line the equations up vertically:

\[ \begin{align*}
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Add the equations together.

\[ 11x = 33 \]

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a) 3
4) $m^2 - k^2$ is equivalent to which of the following?

\[ (m+k)(m-k) \]

Multiply the choices. Remember $mk$ is the same thing as $km$.

a) $(m-k)(m-k) = m^2 - km - km + k^2 = m^2 - 2km + k^2$

b) $(m+k)(m+k) = m^2 + km + km + k^2 = m^2 + 2km + k^2$

C) $(m+k)(m-k) = m^2 + km - km + k^2 = m^2 - k^2$

5) If the point in the graph above is reflected across the line $x = 6$ (not shown), what will be the coordinates of the new point?

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& 0.25 = \frac{x}{120} \\
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Write out 7 blanks and put 23 in the middle.

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\[\text{c) } \frac{4}{19}, \frac{1}{\sqrt{16}}, \frac{13}{45}, \frac{1}{\sqrt{5}}, \pi\]

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b) \( \frac{8}{15} \)

\[ \text{Probability not a freshman or junior} = \frac{30 - 10 - 4}{30} = \frac{16}{30} = \frac{8}{15} \]
23) Which of the following shows the value of \( y \) in terms of \( x \) in the above equation?

\[
37x + 19y = 451
\]

a) \[
\frac{451 - 37x}{19}
\]

To find the value of \( y \) in terms of \( x \), we must solve the equation for \( y \).

\[
\begin{align*}
37x + 19y &= 451 \\
19y &= 451 - 37x \\
y &= \frac{451 - 37x}{19}
\end{align*}
\]

(Choice b shows the value of \( x \) in terms of \( y \!).

24) In a local fruit stand 5 apples were sold for every 4 pears sold. Which could be the total number of apples and pears sold?

d) 108

Since \( 5x + 4x = 9x \), the total must be a multiple of 9. 108 is the only number in the choices that 9 will go into with no remainder.

25) Which of the following is most likely the thickness of a penny?

e) 1 mm.

A penny is very thin. The most reasonable answer is 1 millimeter.
26) Solve the inequality: \(-5x + 2 \geq 37\).
Which of the following could be a solution?

\[\begin{align*}
a) & \quad -7 \\
\text{Notice it did NOT say choose all that apply.} \\
\text{This means there is only ONE correct answer.} \\
-5x + 2 & \geq 37 \\
-5x & \geq 35 \\
\frac{-5x}{-5} & \leq \frac{35}{-7} \\
x & \leq -7 \\
\text{The only number that is less than OR EQUAL to} \\
\text{a negative 7 is negative 7.}
\end{align*}\]

27) In a group of 25 students, 14 say they love math (like you), 9 say they love writing and 5 say they love both. How many love neither?

c) 7

\[\begin{align*}
14 + 9 &= 23 \text{ but the 5 that love both are included in the 23.} \\
23 - 5 &= 18 \text{ students who love math, writing, or both.} \\
25 - 18 &= 7 \text{ students who love neither.}
\end{align*}\]

28) Capital High School is considering a new mascot. Which of the following samples would give a fair representation of the school when polled?

e) Pick a random sample of 20 students from their student i.d. numbers.

All of the over choices have something “special” about them. Using i.d. numbers would be random.
29) Neneth builds a robot arm that can throw a die. The die has the usual 6 sides with the numbers 1 through 6 on them. The robot tosses the die 120 times and the number 1 comes up 35 times. This actual result is approximately how much greater than the theoretical probability of getting the number 1 in 120 tries?

a) $12\%$

\[
\frac{35}{120} = .29 \quad \text{The probability of rolling a one (or any other number) is } \frac{1}{6} = .17
\]

(The number 120 does not matter in the theoretical probability.)

\[
.29 - .17 = .12 \quad \text{or } 12\%$

30) The surface area of a basketball is $100\pi$. What is its volume?

(\text{Surface area of a sphere } = 4\pi r^2. \text{ Volume of a sphere } = \frac{4}{3} \pi r^3)

\[\begin{align*}
\text{S.A.} &= 4\pi r^2 \\
100\pi &= 4\pi r^2 \quad \text{Divide both sides by } \pi. \\
100 &= 4r^2 \quad \text{Divide both sides by 4.} \\
25 &= r^2 \quad \text{Take the square root of both sides.} \\
r &= 5
\end{align*}\]

Now that we know the radius is 5, plug it into the formula for volume.

\[
V = \frac{4}{3} \pi r^3 = \frac{4}{3} \pi (5^3) = \frac{4}{3} \pi (125) = \frac{500\pi}{3}
\]

31) Madeleine currently sells her book for $55. She wants to increase the price by twenty percent. What will be the new price?

a) $66$

\[\begin{align*}
20 \text{ percent} &= .20 \\
.20(55) &= 11 \\
55 + 11 &= 66
\end{align*}\]
32) Behnam bought four cups of coffee @ $4.25, three bagels @ $2.75, six donuts @ $1.80 and five cups of tea @ $4.10. What was his total purchase?

\[
\text{Total Purchase} = (4 \times 4.25) + (3 \times 2.75) + (6 \times 1.80) + (5 \times 4.10) = 17 + 8.25 + 10.80 + 20.50 = 56.55
\]

33) What is the probability that a person randomly selected from the table above has played college basketball and is under 6 feet tall?

c) \( \frac{47}{312} = .15 \)

\[
\text{Probability} = \frac{\text{what you want}}{\text{total}} = \frac{47}{95 + 47 + 68 + 102} = \frac{47}{312} = .15
\]

34) A washer has an inside diameter of 4 cm, and an outside diameter of 20 cm. The thickness of the washer is 0.5 cm. What is the volume of the washer? Volume of a cylinder = \( \pi r^2 h \).

b) \( 48\pi \)

\[
\begin{align*}
V &= \text{Big cylinder - little cylinder (hole)} \\
\text{The height} &= \text{the "thickness"} \\
\text{Diameter of 20} &= \text{radius of 10} \\
\text{Diameter of 4} &= \text{radius of 2} \\
V &= \pi r^2 h - \pi r^2 h \\
V &= \pi (10)^2 (.5) - \pi (2)^2 (.5) \\
V &= 50\pi - 2\pi \\
V &= 48\pi
\end{align*}
\]
35) Solve for \( x \): \( 6(3x - 8) - 5(4x - 6) = 12 \)

\[
\begin{align*}
6(3x - 8) - 5(4x - 6) &= 12 \\
18x - 48 - 20x + 30 &= 12 \\
-2x - 18 &= 12 \\
-2x &= 30 \\
x &= -15
\end{align*}
\]

36) Dividing a number, \( P \), by \( \frac{2}{7} \) and then multiplying it by \( \frac{3}{11} \) is equivalent to:

d) Multiplying \( P \) by \( \frac{21}{22} \)

Dividing by a fraction is equivalent to multiplying by its reciprocal.

\[ P \div \frac{2}{7} \cdot \frac{3}{11} = P \cdot \frac{7}{2} \cdot \frac{3}{11} = P \cdot \frac{21}{22} \]

37) Which of the following shows a function mapping of \( \{3, 7, 9\} \) to \( \{4, 5, 6\} \)? Choose all that apply.

\[ \Box \text{ a) } \]

\[ \Box \text{ b) } \]

\[ \Box \text{ c) } \]

Choice \( d \) has \( (3, 4) \) and \( (3, 5) \) and the \( x \) can't be repeated.
38) In which case would a change in the value of the explanatory variable cause a change in the value of the result response?

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<td>b) Smoking cigarettes</td>
<td>Incidents of lung cancer</td>
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Choice b is the only one that has a proven cause & effect.

39) Which of the following graphs has a y-intercept of 10 and contains the point (3,4)?

**a) \( y = -2x + 10 \)**

When the equation is in the form \( y = mx + b \),
the "b" is the y-intercept.
\( y = -2x + 10 \) has a y-intercept of 10.
Now substitute the point (3,4) into the equation.
Use \( x = 3 \) and \( y = 4 \) to see if they "work".
\[
4 = -2(3) + 10 \\
4 = -6 + 10 \\
4 = 4 \, \sqrt{}
\]

40) Which equation best matches the scatterplot above?

**a) \( y = x + 2 \)**

A line through these points would have a y-intercept of 2 and a slope of 1.
\[
y = mx + b \\
y = 1x + 2 \, \text{ or } \, y = x + 2
\]
41) What is the range of temperatures from the graph above?

Range = highest temperature minus lowest temperature.

\[ 80 - 65 = 15 \]

e) 15

42) Thirty marlins were taken from a section of the ocean and tagged. Later twenty marlins were caught and eight were found to be tagged. Approximately how many marlins were in the original section of the ocean?

b) 75

\[
\frac{\text{tagged}}{\text{total}} = \frac{\text{tagged}}{\text{total}}
\]

\[ \frac{30}{x} = \frac{8}{20} \]

\[ 8x = 600 \]

\[ x = 75 \]

43) Amy, Bill, Cyndy, and Doug each work at GMU. Amy works four times as many hours as Doug. Cyndy and Bill together work the same number of hours as Amy. Which graph correctly shows this information?

Let Doug's hours = \( x \)
Let Amy's hours = 4\( x \)
Let Cyndy’s + Bill’s hours = 4\( x \). For example, Cyndy’s hours could = 3\( x \) and Bill’s could = \( x \).
44) Several crates of paper weigh 58.4 pounds. If 37 percent of the paper in all of the crates is used, approximately how many pounds of paper are used?

\[ 37 \text{ percent} = 0.37 \]
\[ 0.37(58.4) = 21.6 \]

b) 21.6

45) If you are going to solve the problem \(2x - 7 = 5x + 3\), which of the following would be the correct first step?

e) Subtract 2x from both sides

46) A Mars roving vehicle weighs 100 pounds on Earth and 20 pounds on Mars. If a man weighs 150 pounds (on Earth), how much will he weigh on Mars?

\[
\begin{align*}
\frac{\text{Earth}}{\text{Mars}} &= \frac{\text{Earth}}{\text{Mars}} \\
100 &= \frac{150}{20}x \\
100x &= 3000 \\
x &= 30
\end{align*}
\]

47) The ratio of dogs to cats in a shelter is 12:5. If there are 20 cats in the shelter, how many dogs are in the shelter?

d) 48
48) Assuming a linear relationship, how far will the bus take you for $140?

c) 110

Lynn’s Tutoring Earnings

49)

<table>
<thead>
<tr>
<th>Month</th>
<th>Smiley Faces</th>
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</table>
| September | ☺☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻☻�
50) Which of the graphs below shows a negative correlation?

The graph for choice c rises to the left and falls to the right. This is a negative correlation.

(Choice e has a positive correlation.)

51) Solve the inequality: \(2x - 17 > 15\)

Choose all correct answers.

\[d) \ 23 \quad e) \ 1189\]

\[
2x - 17 > 15 \\
2x > 32 \\
x > 16
\]

We do not reverse the symbol because we did NOT divide both sides by a negative number. The only numbers that are greater than 16 are 23 and 1109.

52) The senior class sold Christmas trees, wreaths, and colored ornaments. They sold 1000 ornaments, half of which were red and the rest were gold or white. Which of the following is needed to tell what fraction of the total items sold were red ornaments?

C) The number of trees and wreaths sold.

We already know that 500 red ornaments were sold so we just need to know the number of other items sold (trees and wreaths).
53) The volume of a box is 924 cubic feet. The height is 12 feet, and the width is 7 feet. What is the length of the box?

\[ \text{Volume} = \text{Length} \cdot \text{Width} \cdot \text{Height} \]
\[ 924 = L(12)(7) \]
\[ 924 = 84L \]
\[ L = 11 \]

\[
\begin{array}{c}
6 \\
\downarrow \\
x \\
\end{array}
\]

\[
\begin{array}{c}
6 \\
6 \\
\downarrow \\
\end{array}
\]

54) In the triangle above, \( x \) could be any number except:

\[ \text{e) } 13 \]

The third side of any triangle must be between the difference (6 – 6 = 0) and the sum (6 + 6 = 12) of the other two sides. The only side that is NOT between 0 and 12 is e) 13.
55) Which graph represents the equation: \(x - y = 2\)?

\[
\begin{align*}
\text{Let } x &= 0: \\
-y &= 2 \\
y &= -2
\end{align*}
\]

\[
\begin{align*}
\text{Let } y &= 0: \\
x &= 2
\end{align*}
\]

56) \(K = 12345.6789\). What is the digit in the tenths place of \(K \times 10^{-4}\) ?

\[d) \ 2\]

\[\textbf{When the exponent is negative, we move decimal point to the left.}
\]
\[12345.6789 \times 10^{-4} = 1.23456789\]

\[\text{The digit in the tenths place is } 2.\]