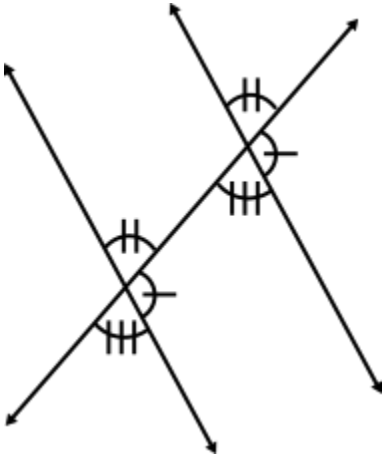Directions: Answer the following question(s).

1 **Which of the following conjectures is true for all cases about the lines in the image shown?**

A. If two lines are cut by a transversal such that the corresponding angles, alternate interior angles and alternate exterior angles are all congruent to each other, then the lines must be parallel.

B. If two lines are cut by a transversal such that the corresponding angles are congruent, alternate interior angles are congruent, and alternate exterior angles are congruent then the lines must be parallel.

C. If two lines are cut by a transversal such that the corresponding angles are supplementary, alternate interior angles are supplementary, and alternate exterior angles are supplementary then the lines must be parallel.

D. If two lines are cut by a transversal such that the corresponding angles are congruent, alternate interior angles are congruent, and alternate exterior angles are congruent then the lines must be perpendicular.

2 **Lines *j* and *k* are shown in the diagram below. Some of the angles created when the lines are cut by a transversal are labeled in the diagram.**
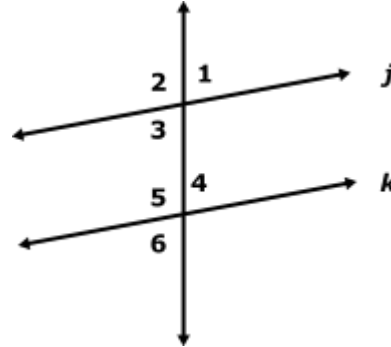

Select the claim that is true about lines *j* and *k* for all cases.

A. If lines *j* and *k* are cut by a transversal such that $m\angle 1 = m\angle 6$, $m\angle 2 = m\angle 5$, and $m\angle 3 = m\angle 4$, then the lines must be parallel.

B. If lines *j* and *k* are cut by a transversal such that $m\angle 1 + m\angle 6 = 180°$, $m\angle 2 + m\angle 5 = 180°$, and $m\angle 3 + m\angle 4 = 180°$, then the lines must be parallel.

C. If lines *j* and *k* are cut by a transversal such that $m\angle 1 = m\angle 6$, $m\angle 2 = m\angle 5$, and $m\angle 3 = m\angle 4$, then the lines must be perpendicular.

D. If lines *j* and *k* are cut by a transversal such that $m\angle 1 + m\angle 6 = 90°$, $m\angle 2 + m\angle 5 = 90°$, and $m\angle 3 + m\angle 4 = 90°$, then the lines must be perpendicular.
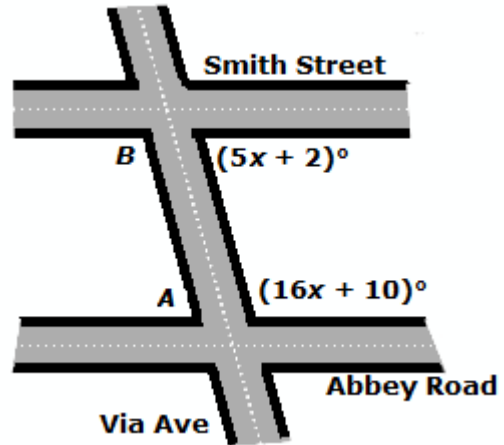
Directions: Answer the following question(s).

3 | A carpenter is making a wooden bookshelf. The image below shows the design of the bookshelf which is *not* to scale. Board 1 is parallel to Board 2.
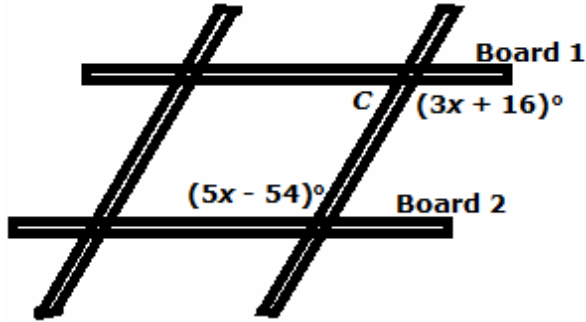
Enter the measure of ∠C.

[   ]°

4 | Samantha is studying the geometric design of roads. She uses a surveying tool to measure the angles at the intersections of the roads near to her school, which are shown in the picture below (NOT to scale). Samantha noted that Smith Street is parallel to Abbey Road.
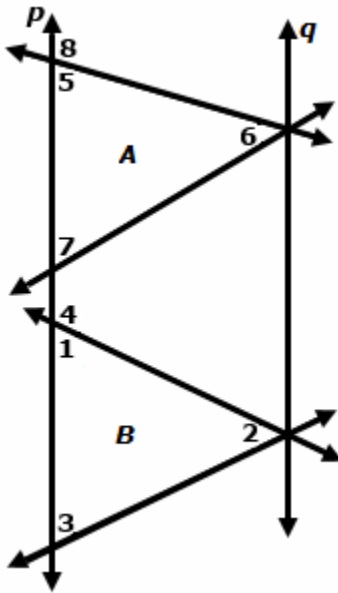

Which of the following statements are true about the picture? Select *three* that apply.

A. The value of *x* is 8.

B. The value of *x* is 21.

C. The measure of angle *A* is 42°.

D. The measure of angle *B* is 42°.

E. Angles *A* and *B* are same side interior angles.

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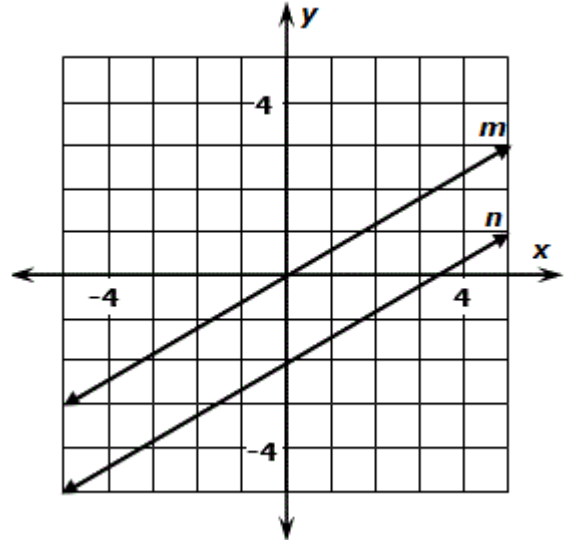Directions: Answer the following question(s).

5 **Line *p* is parallel to Line *q*, as shown in the image below.**

The measure of Angle 8 is less than the measure of Angle 4. Which of the following statements are true about the relationships between the angles in this image? Select *two* that apply.

A.   The measure of Angle 1 is greater than the measure of Angle 5.

B.   The measure of Angle 1 is less than the measure of Angle 5.

C.   The sum of the measures of Angles 2 and 3 is greater than the sum of the measures of Angles 6 and 7.

D.   The sum of the measures of Angles 2 and 3 is equal to the sum of the measures of Angles 6 and 7.
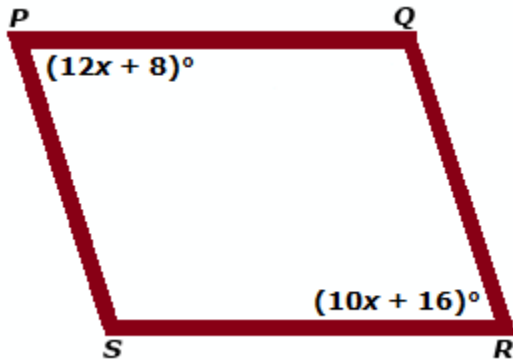
6 **Lines *m* and *n* are parallel. Both lines are translated 4 units up and 3 units right to form lines *m'* and *n'*. The slope of line *m'* is $\frac{3}{5}$.**

Enter the slope of line *n'*.

Directions: Answer the following question(s).

7 **The image below shows a parallelogram–shaped sliding door.**

Which of the following statements are true if this door slides 2 feet to the right? Select *two* that apply.

A. Side *PQ* would be parallel to Side *SR*, and Angle *R* would measure 56°.

B. Side *PS* would be parallel to Side *QR*, and Angle *S* would measure 124°.

C. Side *PQ* would be parallel to Side *PS*, and Angle *P* would measure 56°.

D. Side *QR* would be parallel to Side *SR*, and Angle *Q* would measure 62°.

8 **Line segments *B* and *C* are congruent and parallel. Line segment *B* is translated 2 units to the right and 2 units down to form line segment *X*. Line segment *C* is 4.5 units in length.**

Enter the length, in units, of line segment *X*.

[_____] **units**

9 **Marlene noticed that when a pair of parallel lines was cut by a transversal, two particular vertical angles were reflections of each other. What can she conclude from this observation?**

A. the measures of the angles must be equal

B. the angles must be complementary

C. the angles must be supplementary

D. the measures of the angles must add to 360°

10 **Thomas is developing an electronic circuit for his toy car. The image below shows the design of the circuit in which *J1*, *J2*, and *J3* represent junctions. Thomas also noted that Conductor 1 is parallel to Conductor 2.**
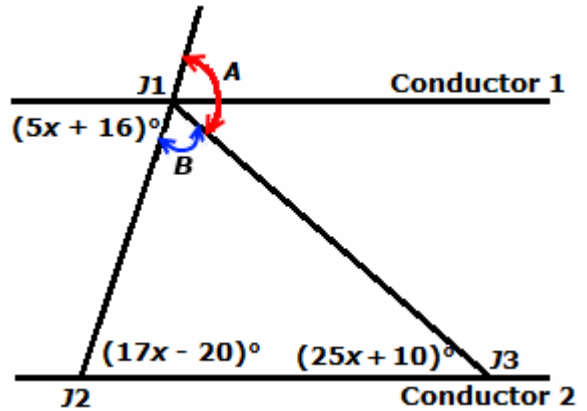
Which of the following statements are true about the design? Select *three* that apply.

A. Angle B measures 64°.

B. Angle *B* alternates with angle *A*.

C. Angle *A* would measure 116°.

D. Angle *A* is an exterior angle of the triangle formed by junctions *J1*, *J2*, and *J3*.

11 **An equation is shown, where *a* and *b* are rational numbers.**

$$a(2x - 3) + b = -17$$

Complete the table with the value of *x* for the given values of *a* and *b*.

Values of *a* and *b*	Value of *x*
$a = \frac{1}{6}$; $b = 9\frac{1}{2}$	[____]
$a = -11$; $b = -6$	[____]
$a = 2.4$; $b = -11$	[____]

Directions: Answer the following question(s).

12 **Scarlet and Gunner are trying to determine which of them traveled at a greater speed when coming back from their vacation.**

Gunner's traveling time is displayed by this graph.
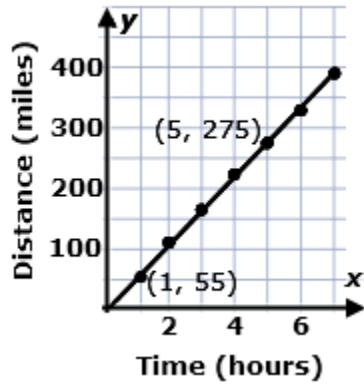
Scarlet maintained a constant speed throughout her 7–hour journey. Her speed can be modeled by $455 = mx$, where x is the time in hours, and m is the rate at which Scarlet traveled.

Based upon these two models, which person traveled at a greater speed? Explain your reasoning by using a written description of each scenario. Be sure to include the unit rates in your explanation.

13 **Steven has 163 paper clips. He is going to keep 27 for himself, and divide the rest among 8 of his friends. How many paper clips would each of his friends receive? Select two that apply.**

A. $\sqrt{289}$

B. 15

C. 16

D. $\sqrt{136}$

E. 17

14 **The system of linear equations given can be graphed on a coordinate plane.**

$$y = -\frac{1}{2}x - 3$$

$$y = 2x - 8$$

What is the solution to this system of equations?

15 **A spacecraft that has been traveling for about 330,000 hours is approximately 1.98×10^{10} kilometers away from Earth.**

Which of the following statements are true regarding this spacecraft? Select *all* that apply.

A. The spacecraft is traveling at a rate of approximately 60,000 kilometers per hour.

B. The spacecraft is traveling at a rate of approximately 6×10^9 millimeters per hour.

C. In a hundred hours, the spacecraft travels approximately 6 billion meters.

D. In a hundred hours, the spacecraft travels approximately 6×10^{11} centimeters.

16 **Which of the following equations have no solution for a? Select *all* that apply.**

A. $5a - 1 + 2a + 5 + a = 9a + 3a + 8 - 5a - 6$

B. $1 + 2a - 7 + 9a + 5 = 6a + 8a - 13 + 2 - 3a$

C. $8a - 5 + 2a - 6 + 18 = 9 + 8 - 3a + 13a - 10$

D. $12 + 4a - 3a - 12 + 5a = 16 - 2a - 7 - 9 + 2a$

E. $-3a - 12a + 5 + 6a - 10 = 11 - 7a - 6 + 2a - 4a$

F. $-20 - 2a + 12 + 4 + 18a = 10a + 8 - 13 + 6a - 1$

17 **An equation is shown below.**

$$\frac{2}{5}x + 21 = -\frac{1}{5}(8x - 25) - 2x$$

Enter the value of x that makes this equation true.

$x = $ ▭

Directions: Answer the following question(s).

18 How many times larger is 8×10^4 than 8×10^1?

  A. 512

  B. 1000
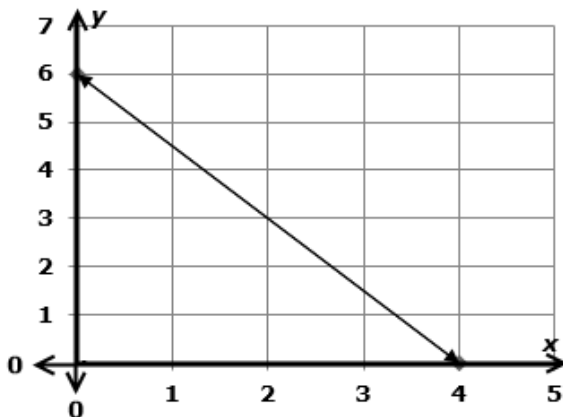
  C. 4096

  D. 10,000

19 An equation is shown below.

$$\frac{5 \cdot 5^k}{5^{-8}} = 5^3$$

What value of *k* makes this equation true?

$k = $ _____

20 Select *two* possible values for *x* in the equation $x^3 = 216$.

  A. 6

  B. $\sqrt[3]{216}$

  C. $3\sqrt[3]{24}$

  D. $6\sqrt[3]{6}$

21 Consider the line shown on the graph.

Enter the equation of the line in the form $y = mx + b$ where *m* is the slope and *b* is the *y*–intercept.

_____

22 Which of the following expressions are greater than 7 and less than 14? Select *three* that apply.

  A. $\sqrt{44}$

  B. $\sqrt{53}$

  C. $\sqrt{97}$

  D. $\sqrt{159}$

23 Which equations are correct? Select *three* that apply.

  A. $(6.1 \times 10^5) + (2.3 \times 10^6) = 291,000$

  B. $(3.3 \times 10^8) + (5.4 \times 10^7) = 87,000,000$

  C. $(4.2 \times 10^7) + (3.7 \times 10^6) = 45,700,000$

  D. $(2.4 \times 10^6) + (4.4 \times 10^5) = 6,800,000$

  E. $(5.8 \times 10^7) + (2.1 \times 10^8) = 268,000,000$

  F. $(4.3 \times 10^5) + (5.2 \times 10^4) = 482,000$

24 Simplify the expression:

$$\frac{2^{-3}}{2^2}$$

  A. 2^{-1}

  B. $\frac{1}{2}$

  C. $\frac{1}{32}$

  D. $\frac{1}{2^{-1}}$

25 Which of the following equations defines a line that will intersect the graph of $6x - 2y = 10$ exactly once?

  A. $y = 3x - 10$

  B. $y = 3x - 5$

  C. $y = 3x - 1$

  D. $y = 6x - 5$

Directions: Answer the following question(s).

26 **The square root of 1000 is between _____ .**

A. 498 and 502

B. 98 and 102

C. 48 and 52

D. 28 and 32

27 **The number of ushers a local concert venue assigns to work a concert is related to the number of tickets sold for each show. The graph below shows the number of ushers assigned and number of tickets sold for four performances last week.**

Recent Concerts
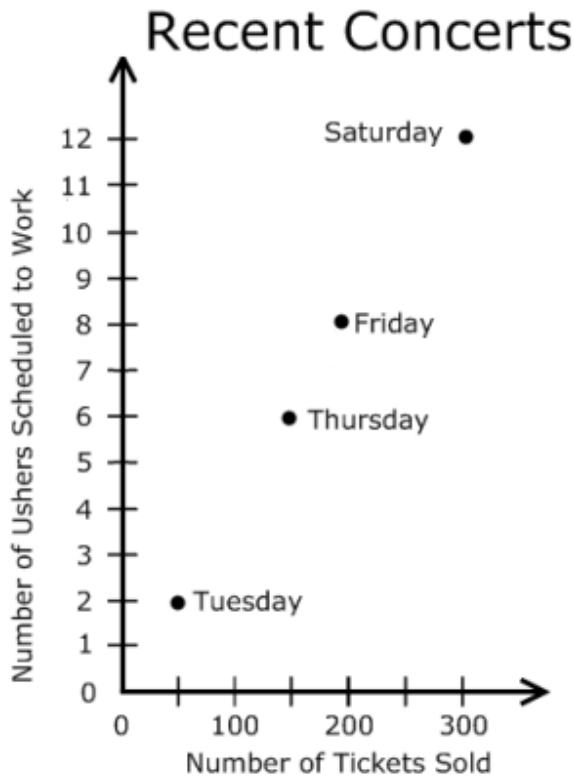
According to the graph, the venue assigns one usher to work for every how many tickets sold?

A. 2

B. 25

C. 40

D. 50

28 **Bill bowled 3 games at a bowling alley and rented shoes, spending a total of $9.00. LeAnn bowled 5 games at the bowling alley and rented shoes, spending a total of $14.00. How much does it cost to bowl a game?**

A. $1.50

B. $2.50

C. $2.80

D. $3.00

29 **At what point do the graphs of the equations $9x - 2y = 30$ and $x + 2y = 10$ intersect?**

A. (2, 4)

B. (3, 4)

C. (4, 2)

D. (4, 3)

30 **Which of these is a solution to the system of equations $3x - y = 15$ and $6x - 2y = 30$? Select all that apply.**

A. (6, 3)

B. (7, 6)

C. (8, 9)

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Stop: You have finished the assessment.
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