## Meet 5 - Event A



1. Leona draws a shape on a coordinate plane. She rotates the shape $90^{\circ}$ counter-clockwise about the origin and then translates it 5 units left. Which statement compares the image of Leona's shape after the transformations with her original shape? Writer the letter on the line.
A. The two shapes are similar but not congruent.
B. The two shapes are congruent but not similar.
C. The two shapes are both similar and congruent.
D. The two shapes are neither similar nor congruent.
$x=$
2. Solve for $x$.

$$
3(6 x-7)-(5 x+22)-3=-20
$$

3. A data set is shown.
$16,48,5,30,71,50,62,59,18,47,52,12,56,9,28$
Isaac creates a histogram of the data set that uses consistent intervals. The first bar of the histogram is labeled " $0-14$ ". What is the height of the tallest bar in Isaac's histogram?
4. The two line plots show the number of goals scored by each player on two different hockey teams during the season.


Goals Scored by Players on Team A


Goals Scored by Players on Team B

A player that scored at least 5 goals during the season is randomly selected from either team. What is the probability that this player is from Team B? Write your answer as a reduced fraction.
5. Write the difference in base 5 .

$$
30421_{5}-4132_{5}
$$

## Answers

Questions are worth 2-2-2-4-4 points respectively.

$\qquad$
C 1.
$x=2$
2. $3(6 x-7)-(5 x+22)-3=-20 ; 18 x-21-5 x-22-3=-20 ; 13 x-46=-20$;
$13 x=26 ; x=2$

6
3. If the first bar is labeled $0-14$, then the remaining bars are $15-29,30-44$, $45-59$, and $60-74$. There are 3 values in the $0-14$ range. There are 3 values in the $15-29$ range. There is 1 value in the $30-44$ range. There are 6 values in the $45-59$ range. There are 2 values in the $60-74$ range. Therefore, the tallest bar is 6 units high.
4. There are 4 players on Team A who scored at least 5 goals and 7 players on Team B who scored at least 5 goals. This means there are a total of 11 players who scored at least 5 goals. Since 7 of these players come from Team $B$, the probability is $\mathbf{7 / 1 1}$.


$\mathrm{cm}^{2}$ 1. Rectangle $A$ has a length of $(7 r+2) \mathrm{cm}$ and a width of 4 cm .
Rectangle $B$ has a length of $5 r \mathrm{~cm}$ and a width of 3 cm . What is the total area, in square cm , of both rectangles?
in. 2. Cody is creating a scale drawing of a hippopotamus. The actual hippopotamus is 3.2 meters long and 1.8 meters tall. Cody draws the length of the hippopotamus to be 8 inches. How tall should the hippopotamus in Cody's drawing be?
3. At what point do the lines of the equations intersect? Write your answer as an ordered pair.

$$
\begin{aligned}
& 2 x+y=7 \\
& -3 x+4 y=6
\end{aligned}
$$

4. A veterinarian surveyed 40 of her patrons.

- 14 own dogs - 3 own both cats and dogs
- 15 own cats
- 4 own both cats and birds
- 10 own birds
- 6 own both dogs and birds
- 0 own all three types of pets

How many patrons own neither a dog, nor a cat, nor a bird? Write your answer on the first line.

What is the probability that a randomly selected patron owns only a bird? Write your answer on the second line.
5. Simplify.

$$
\frac{2 x^{2}+5 x-25}{4 x^{2}+23 x+15}
$$

## Answers

Questions are worth 2-2-2-4-4 points respectively.

$(43 r+8) \mathrm{cm}^{2}$

1. $(7 r+2)(4)=28 r+8 ;(5 r)(3)=15 r ;(28 r+8)+(15 r)=43 r+8$

Parentheses may or may not be included
$\qquad$
4.5 in. 2. $\frac{3.2 \mathrm{~m}}{1.8 \mathrm{~m}}=\frac{8 \mathrm{in}}{x \mathrm{in}}$;
$3.2 x=1.8(8)$
$3.2 x=1$ $14.4 ; x=\frac{144}{32} ; x=\frac{9}{2} ; x=4.5$
$(2,3)$
3. Multiply the first equation by 4 to yield:

$$
\begin{aligned}
& 8 x+4 y=28 \\
& -3 x+4 y=6
\end{aligned}
$$

Subtract the equations to yield:

$$
11 x=22 ; x=2
$$

Substitute 2 into either equation for $x$ to solve for $y$ :

$$
2(2)+y=7 ; y=3
$$

14
4. $40-(5+6+3+8+4)=14$

$$
0 / 40=0
$$

0
2 points per response


$$
\begin{aligned}
& \frac{\frac{2 x-5}{4 x+3}}{5 .} \begin{array}{l}
\frac{2 x^{2}+5 x-25}{4 x^{2}+23 x+15}=\frac{2 x^{2}+10 x-5 x-25}{4 x^{2}+20 x+3 x+15}=\frac{2 x(x+5)-5(x+5)}{4 x(x+5)+3(x+5)}=\frac{(2 x-5)(x+5)}{(4 x+3)(x+5)}= \\
\frac{2 x-5}{4 x+3}
\end{array}
\end{aligned}
$$

## Questions are worth 4 points each.

No calculators allowed

$C=$ $\qquad$ 1. A system of linear equations is shown. Which value of $c$ results in a system with no solution?

$$
\begin{aligned}
& 2 y=-\frac{1}{3} x+6 \\
& -c x+y=10
\end{aligned}
$$

2. A square fountain is inside a triangular park, as shown. James kicks a ball from a nearby field such that it lands somewhere inside the park. What is the probability that the ball lands in the fountain? Write your answer as a percentage.
3. The expression below can be written in the form $\mathrm{A} x+\mathrm{B} y$, where A and B are rational numbers. What is the value of $B$ ?

$$
\frac{3}{5}(10 x-2 y)+\frac{x}{3}+\frac{3 y}{4}
$$

un. 4. In the figure, point $D$ is the midpoint of $A B$, and point $E$ is the midpoint of $C B$. What is the length, in units, of DE?

$\min$
5. Ms. Taylor charges $\$ 200$ plus $\$ 30$ per hour to tune pianos. Mr. Sanders charges $\$ 175$ plus $\$ 45$ per hour to tune pianos. For how many minutes of piano tuning does Ms. Taylor charge the same amount as Mr. Sanders?
6. Write the sum in base $10: \quad 5272_{8}+346_{7}$
7. One factor of the expression $21 x^{2}-82 x+40$ is $(7 x-4)$. What is the other factor?
8. The values in the data set are listed from least to greatest. The two missing values are represented by A and B. All of the values in the data set are whole numbers.

$$
5,5,6,8,8,8,10, A, B, 15,16,18
$$

The table shows some statistical measures about the complete data set. How many different possible values are there for $A$ ?

| Statistical Measure | Value |
| :--- | :---: |
| Minimum | 5 |
| First Quartile | 7 |
| Median | 9 |
| Third Quartile | 14 |
| Maximum | 18 |

9. Liz draws two circles that have the same center. One circle has a radius of 3 inches, and the other circle has a radius of 6 inches. She then randomly picks a point inside the larger circle. What is the probability the point is also inside the smaller circle? Write your answer as a reduced fraction.
10. A data set is displayed on a line plot, as shown. What is the mean of the data set? Write your answer as a reduced fraction.

$\qquad$

## Answers

Questions are worth 4 points each.

$\qquad$ 1. A system of linear equations has no solution when the lines are parallel, and parallel lines have equal slopes. Convert both equations into slope-intercept form to find that the slope of the first line is $(-1 / 6)$ and the slope of the second line is $(c)$. Therefore, $c$ must be $(-1 / 6)$.

4\%
2. Area of park: $(70)(140) / 2=4900 \mathrm{ft}^{2}$

Area of fountain: $(14)(14)=196 \mathrm{ft}^{2}$
$196 / 4900=14 / 350=7 / 175=1 / 25=4 / 100=4 \%$
$\frac{-9}{20}$
3. $\frac{3}{5}(10 x-2 y)+\frac{x}{3}+\frac{3 y}{4}=6 x-\frac{6}{5} y+\frac{1}{3} x+\frac{3}{4} y=6 \frac{1}{3} x+\left(-\frac{6}{5}+\frac{3}{4}\right) y$
$B=-\frac{6}{5}+\frac{3}{4}=-\frac{24}{20}+\frac{15}{20}=-\frac{9}{20}$

40 un.
4. $4 x+8=\frac{1}{2}(12 x-16) ; 4 x+8=6 x-8 ;-2 x=-16 ; x=8$
$D E=4 x+8=4(8)+8=\mathbf{4 0}$
100 min
5. $\mathrm{T}: 200+30 h ; \mathrm{S}: 175+45 h$
$200+30 h=175+45 h ; 25=15 h ; h=12 / 3$ $12 / 3$ hours = $\mathbf{1 0 0}$ minutes

2927
6. $\left[\left(5 \times 8^{3}\right)+\left(2 \times 8^{2}\right)+(7 \times 8)+2\right]+\left[\left(3 \times 7^{2}\right)+(4 \times 7)+6\right]=$ $(2560+128+56+2)+(147+28+6)=2746+181=2927$ $(3 x-10) \quad 7$ 7.

## Parentheses may or may not be included

4
8. B must be 13 . So the possibilities for $A$ are $10,11,12$, or 13 .
$1 / 4$
9. Area of larger circle: $36 \pi$

Area of smaller circle: $9 \pi$
$9 \pi / 36 \pi=1 / 4$
57/64
10. $(3 / 8)+(5 / 8)+(5 / 8)+(7 / 8)+(8 / 8)+(9 / 8)+(9 / 8)+(11 / 8)=57 / 8$ $57 / 8 \div 8=57 / 64$

