

Ohio's State Tests Reference Sheet High School

1 foot = 12 inches

1 pound = 16 ounces

1 cup = 8 fluid ounces

1 yard = 3 feet

1 pound \approx 0.454 kilograms

1 pint = 2 cups

1 mile = 1,760 yards

1 kilogram \approx 2.2 pounds

1 quart = 2 pints

1 mile = 5,280 feet

1 gallon = 4 quarts

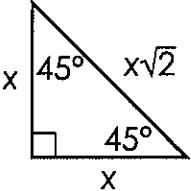
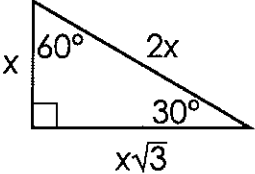
1 mile \approx 1.609 kilometers1 gallon \approx 3.785 liters

1 inch = 2.54 centimeters

1 liter \approx 0.264 gallons1 kilometer \approx 0.62 mile

1 liter = 1000 cubic centimeters

1 meter \approx 39.37 inches

Trigonometry		
$\sin A = \frac{\text{opposite}}{\text{hypotenuse}}$		
$\cos A = \frac{\text{adjacent}}{\text{hypotenuse}}$		
$\tan A = \frac{\text{opposite}}{\text{adjacent}}$		

Key			
$b = \text{base}$	$B = \text{area of base}$	$h = \text{height}$	$r = \text{radius}$

Triangle	$A = \frac{1}{2}bh$
Parallelogram	$A = bh$
Circle	$C = 2\pi r$ $A = \pi r^2$

General Prisms	$V = Bh$
Cylinder	$V = \pi r^2 h$
Sphere	$V = \frac{4}{3}\pi r^3$
Cone	$V = \frac{1}{3}\pi r^2 h$
Pyramid	$V = \frac{1}{3}Bh$

Distance Formula	$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
Quadratic Formula	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Addition Rule	$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$

- Circle J is located in the first quadrant with center (a, b) and radius s . Felipe transforms Circle J to prove that it is similar to any circle centered at the origin with radius t .

Which sequence of transformations did Felipe use?

- Translate Circle J by $(x + a, y + b)$ and dilate by a factor of $\frac{t}{s}$.
- Translate Circle J by $(x + a, y + b)$ and dilate by a factor of $\frac{s}{t}$.
- Translate Circle J by $(x - a, y - b)$ and dilate by a factor of $\frac{t}{s}$.
- Translate Circle J by $(x - a, y - b)$ and dilate by a factor of $\frac{s}{t}$.

- Francisco asks the students in his school what pets they have. He studies the events shown.

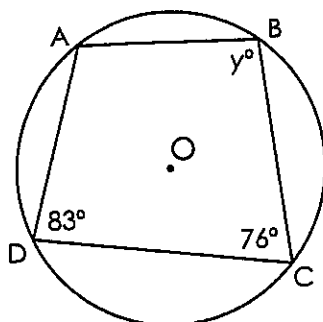
- Event S : The student has a cat.
- Event T : The student has a dog.

Francisco finds that the two events are independent.

In the **Answer Document**, select all the equations that must be true for events S and T .

- $P(S | T) = P(S)$
- $P(S | T) = P(T)$
- $P(T | S) = P(S)$
- $P(T | S) = P(T)$
- $P(S \cup T) = P(S) \cdot P(T)$
- $P(S \cap T) = P(S) \cdot P(T)$

- Quadrilateral $ABCD$ is inscribed in circle O , as shown.



What is the value of y ?

Complete the response grid in the **Answer Document**.

9. Two events, A and B, are independent.

- $P(A) = 0.3$
- $P(A \text{ and } B) = 0.24$

What is $P(B)$?

11. Sam is picking fruit from a basket that contains many different kinds of fruit.

Which set of events is independent?

- A. Event 1: He picks a kiwi and eats it.
Event 2: He picks an apple and eats it.
- B. Event 1: He picks an apple and eats it.
Event 2: He picks an apple and eats it.
- C. Event 1: He picks a kiwi and eats it.
Event 2: He picks a kiwi and puts it back.
- D. Event 1: He picks a kiwi and puts it back.
Event 2: He picks an apple and puts it back.

12. The probability of flipping a fair coin and heads landing face up is 0.5. The probability of rolling a fair number cube, with sides numbered 1 through 6, and an odd number landing face up is 0.5.

What is the probability of flipping heads or rolling an odd number?

4. Kyle performs a transformation on a triangle. The resulting triangle is similar but not congruent to the original triangle.

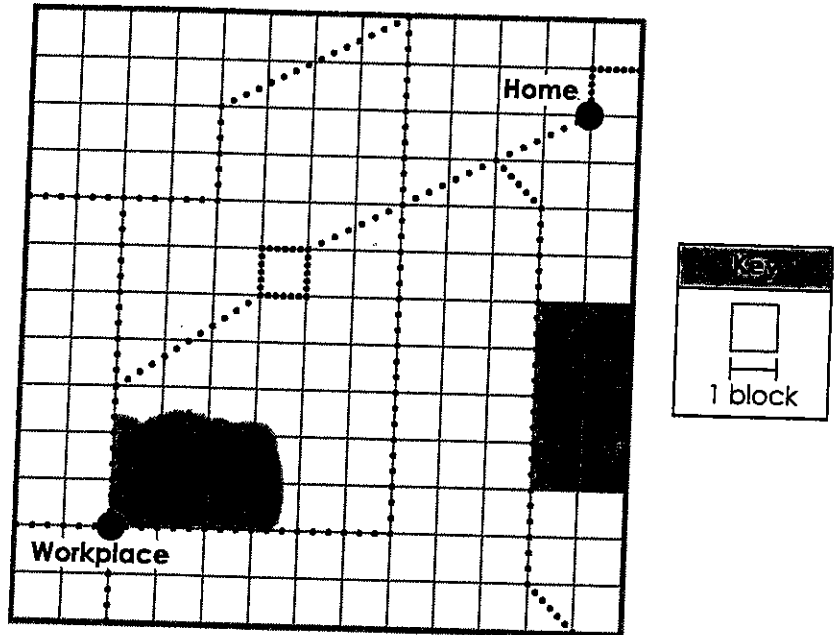
Which transformation did Kyle perform on the triangle?

- A. dilation
- B. reflection
- C. rotation
- D. translation

5. Triangle ABC has vertices A(1, 1), B(2.5, 3), and C(0, -3). It is dilated by a scale factor of $\frac{1}{2}$ about the origin to create triangle A'B'C'.

What is the length, in units, of side $\overline{B'C'}$?

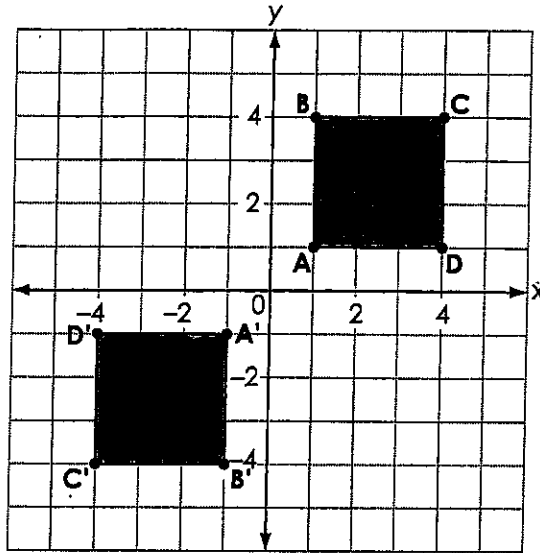
7. A map of Jane's town with her home and workplace is shown.



Jane wants to determine the shortest route from her home to her workplace. She walks only on the sidewalks indicated by dotted lines on the map.

What is the distance of the shortest route, to the nearest whole block?

11. Square ABCD is transformed to create the image A'B'C'D', as shown.



In the **Answer Document**, select all of the transformations that could have been performed.

- A. a reflection across the line $y = x$
- B. a reflection across the line $y = -2x$
- C. a rotation of 180 degrees clockwise about the origin
- D. a reflection across the x-axis, and then a reflection across the y-axis
- E. a rotation of 270 degrees counterclockwise about the origin, and then a reflection across the x-axis

-
1. Line segment AC has endpoints A(-1, -3.5) and C(5, -1).

Point B is on line segment AC and is located at (0.2, -3).

What is the ratio of $\frac{AB}{BC}$?

Complete the response grid in the **Answer Document**.

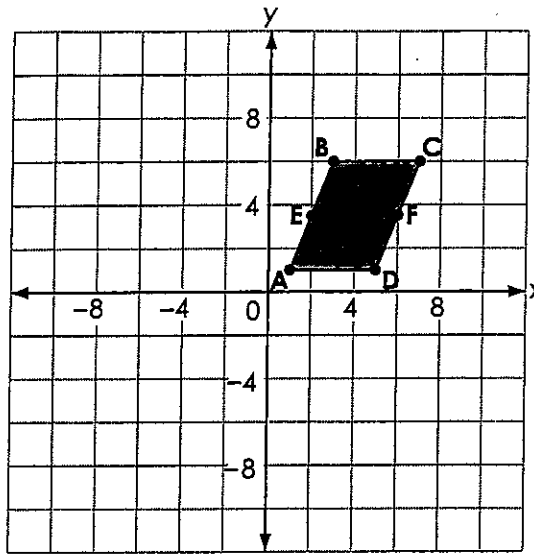
2. Triangle ABC has vertices at (-4, 0), (-1, 6) and (3, -1).

What is the perimeter of triangle ABC, rounded to the nearest tenth?

Complete the response grid in the **Answer Document**.

the midpoint of segment CD.

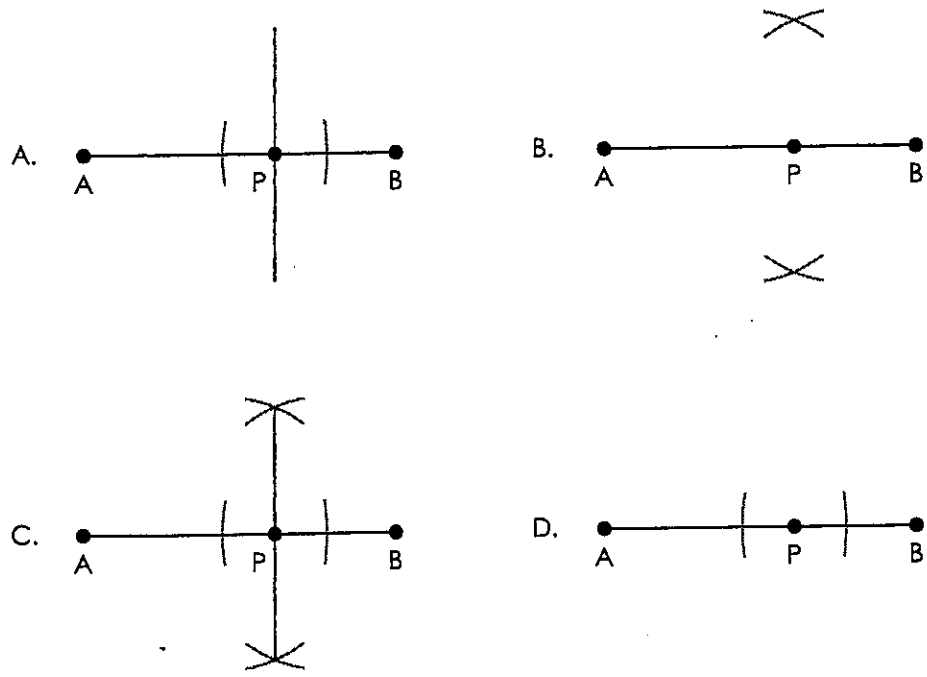
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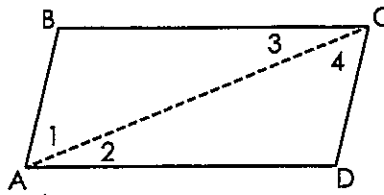


Which transformation carries the parallelogram onto itself?

- A. a reflection across line segment AC
- B. a reflection across line segment EF
- C. a rotation of 180 degrees clockwise about the origin
- D. a rotation of 180 degrees clockwise about the center of the parallelogram

9. Which diagram shows only the first step of constructing the line perpendicular to \overline{AB} through point P?





Given: ABCD is a parallelogram with diagonal \overline{AC} .

Prove: $\angle BAD \cong \angle DCB$

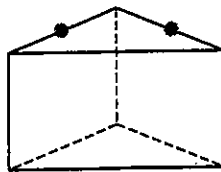
Proof:

Statements	Reasons
ABCD is a parallelogram with diagonal \overline{AC} .	Given
$\overline{AB} \parallel \overline{CD}$ and $\overline{AD} \parallel \overline{BC}$	Definition of parallelogram
$\angle 2 \cong \angle 3$ $\angle 1 \cong \angle 4$	Alternate interior angles are congruent.
$m\angle 2 = m\angle 3$ and $m\angle 1 = m\angle 4$	Measures of congruent angles are equal.
$m\angle 1 + m\angle 2 = m\angle 4 + m\angle 2$	Addition property of equality
$m\angle 1 + m\angle 2 = m\angle 4 + m\angle 3$?
$m\angle 1 + m\angle 2 = m\angle BAD$ $m\angle 3 + m\angle 4 = m\angle DCB$	Angle addition postulate
$m\angle BAD = m\angle DCB$	Substitution
$\angle BAD \cong \angle DCB$	Angles are congruent when their measures are equal.

What is the missing reason in this partial proof?

- A. ASA
- B. Substitution
- C. Angle addition postulate
- D. Alternate interior angles are congruent.

13. A cross section of a right triangular prism is created by a plane cut through the points shown and is also perpendicular to the opposite base.



What is the most specific name of the shape representing the cross section?

- A. triangle
- B. rectangle
- C. trapezoid
- D. parallelogram