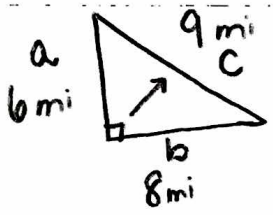
Name & Class Block: KEY

Pythagorean Theorem Grab-Bag

Show your work and answer each question below. Be sure to do the problems on the back of the page, too.

1. Ishmael owns a triangular piece of land. The sides of the land measure 6 mi (a) by 8 mi (b) by 9 mi (c). Is the land a right triangle? Prove your answer.



$a^2+b^2=c^2$

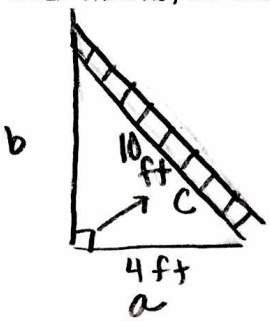
$(6)^2+(8)^2 \stackrel{?}{=} (9)^2$

$36+64 \stackrel{?}{=} 81$

$100 \neq 81$

The land is NOT a right triangle.

2. A 10-foot ladder is leaning against a wall. The bottom of the ladder is 4 feet from the base of the wall. What is the distance from the top of the ladder to the base of the wall? Round your answer to the nearest tenth if needed.



$a^2+b^2=c^2$

$(4)^2+b^2=(10)^2$

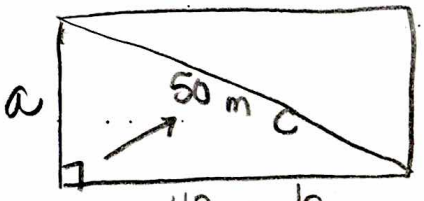
$16+b^2=100$

$-16 \quad -16$

$\sqrt{b^2}=\sqrt{84}$

$b \approx 9.2$ ft

3. Betty is taking a shortcut to her friend's house by walking a diagonal path across a vacant lot. The path is 50 m and the lot is 40 m long. How wide is the lot?



$a^2+b^2=c^2$

$a^2+(40)^2=(50)^2$

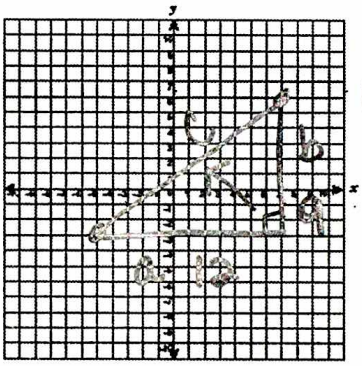
$a^2+1600=2500$

$-1600 \quad -1600$

$\sqrt{a^2}=\sqrt{900}$

$a = 30$ feet wide

4. Determine the distance between (-5, -3) and (7, 6).



$a^2+b^2=c^2$

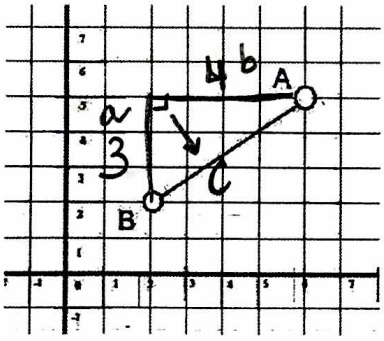
$(12)^2+(9)^2=c^2$

$144+81=c^2$

$\sqrt{225}=\sqrt{c^2}$

$c = 15$ units

5. In the given coordinate plane, find the distance between A and B.



$a^2+b^2=c^2$

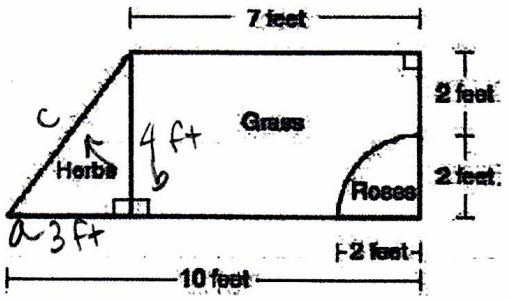
$(3)^2+(4)^2=c^2$

$9+16=c^2$

$\sqrt{25}=\sqrt{c^2}$

$c = 5$ units

6. Joan has a garden in the shape of a trapezoid, as shown in the drawing below. Joan wants to fence the triangular portion of the garden where the herbs grow. How many feet of fence will she need? → perimeter!



$a^2+b^2=c^2$

$(3)^2+(4)^2=c^2$

$9+16=c^2$

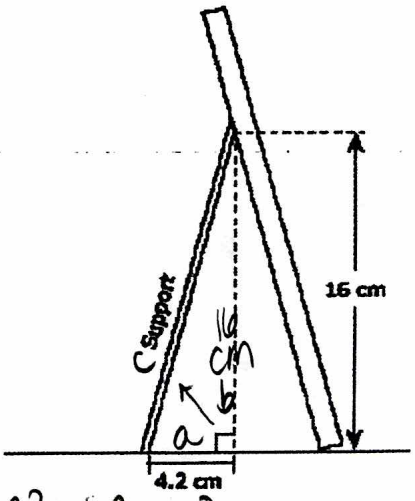
$\sqrt{25}=\sqrt{c^2}$

$c = 5$ ft

$3+4+5=12$

Joan needs 12 ft of fence.

7. The drawing below shows the side view of a picture frame on Mary's desk. What is the length of the frame support, rounded to the nearest tenth of a centimeter?



$a^2+b^2=c^2$

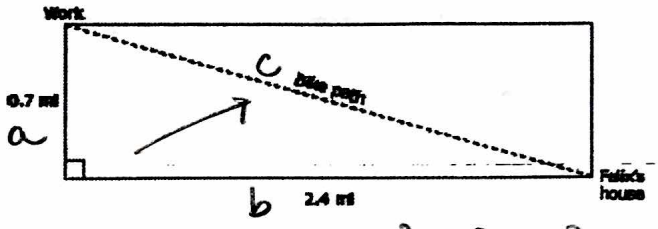
$(4.2)^2+(16)^2=c^2$

$17.64+256=c^2$

$\sqrt{273.64}=\sqrt{c^2}$

$c \approx 16.5$ cm

8. To get from home to work, Felix can either take a bike path through the rectangular park or ride his bike along two sides of the park.



$a^2+b^2=c^2$

How much farther would Felix travel by riding along two sides of the park than he would by taking the path through the park?

2 sides of Park

$0.7+2.4=3.1$ mi

Path

$(0.7)^2+(2.4)^2=c^2$

$0.49+5.76=c^2$

$\sqrt{6.25}=\sqrt{c^2}$

2.5 mi $=c$

How much farther?

$3.1-2.5=0.6$

Felix travels 0.6 mi farther going around the park

Extra work space