

Name: Key

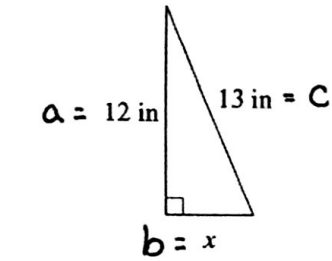
Period: _____

Checkpoint 7A

Integrated Math 2

Answer the questions thoroughly including any necessary math or explanations.

1) Solve for x.



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

$$(12)^2 + x^2 = (13)^2$$

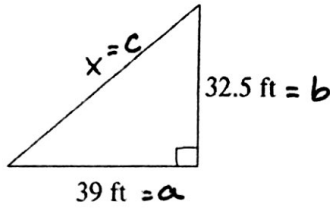
$$144 + x^2 = 169$$

$$\begin{array}{r} -144 \\ \hline x^2 = 25 \end{array}$$

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

$$x = 5 \text{ in}$$

2) Solve for x.



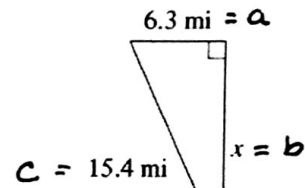
$$a^2 + b^2 = c^2$$

$$(39)^2 + (32.5)^2 = x^2$$

$$\sqrt{2577.25} = \sqrt{x^2}$$

$$x \approx 50.77 \text{ ft}$$

3) Solve for x.



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

$$(6.3)^2 + x^2 = (15.4)^2$$

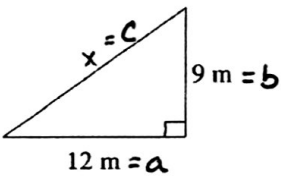
$$39.69 + x^2 = 237.16$$

$$\begin{array}{r} -39.69 \\ \hline x^2 = 197.47 \end{array}$$

$$\sqrt{x^2} = \sqrt{197.47}$$

$$x \approx 14.05 \text{ mi}$$

4) Solve for x.



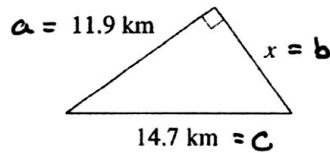
$$a^2 + b^2 = c^2$$

$$12^2 + 9^2 = x^2$$

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

$$15 \text{ m} = x$$

5) Solve for x.



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

$$(11.9)^2 + x^2 = (14.7)^2$$

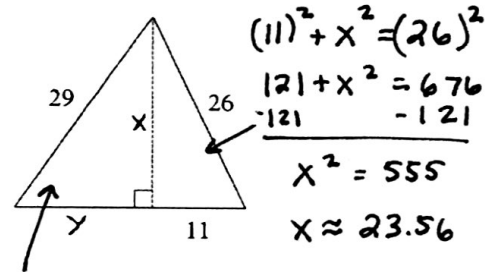
$$141.61 + x^2 = 216.09$$

$$\begin{array}{r} -141.61 \\ \hline x^2 = 74.48 \end{array}$$

$$\sqrt{x^2} = \sqrt{74.48}$$

$$x \approx 8.63 \text{ km}$$

6) Solve for x and y.



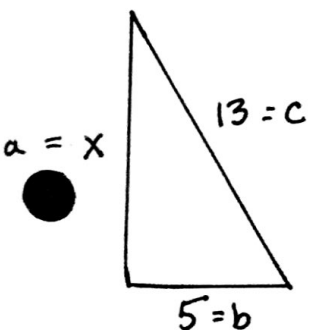
$$(23.56)^2 + y^2 = (29)^2$$

$$555 + y^2 = 841$$

$$\begin{array}{r} -555 \\ \hline y^2 = 286 \end{array}$$

$$y \approx 16.91$$

7) Ms. Green tells you that a right triangle has a hypotenuse of 13 and a leg of 5. She asks you to find the other leg of the triangle. What is your answer?



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

$$x^2 + (5)^2 = (13)^2$$

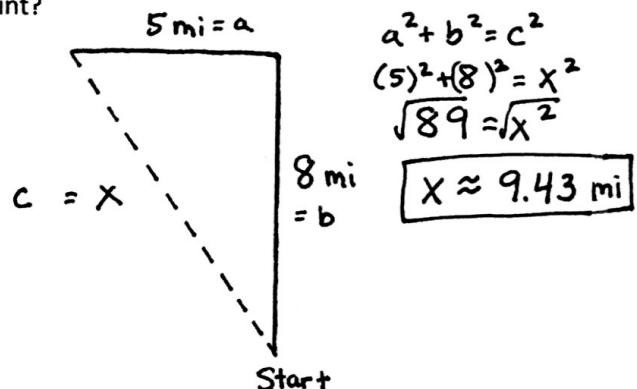
$$x^2 + 25 = 169$$

$$\begin{array}{r} -25 \\ \hline x^2 = 144 \end{array}$$

$$\sqrt{x^2} = \sqrt{144}$$

$$x = 12$$

8) Two joggers run 8 miles north and then 5 miles west. What is the shortest distance, to the nearest tenth of a mile, they must travel to return to their starting point?



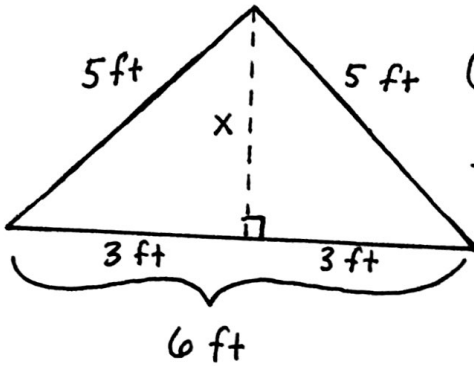
$$a^2 + b^2 = c^2$$

$$(5)^2 + (8)^2 = x^2$$

$$\sqrt{89} = \sqrt{x^2}$$

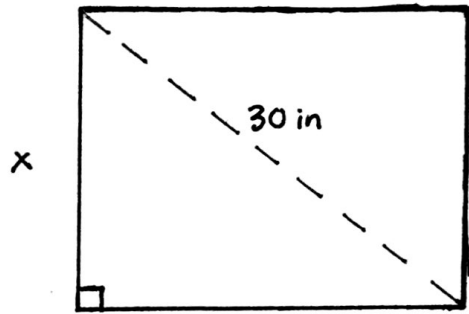
$$x \approx 9.43 \text{ mi}$$

9) Oscar's dog house is shaped like a tent. The slanted sides are both 5 feet long and the bottom of the house is 6 feet across. What is the height of his dog house, in feet, at its tallest point?



$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 (3)^2 + (x)^2 &= (5)^2 \\
 9 + x^2 &= 25 \\
 -9 &\quad -9 \\
 \hline
 \sqrt{x^2} &= \sqrt{16} \\
 \boxed{x = 4 \text{ ft}}
 \end{aligned}$$

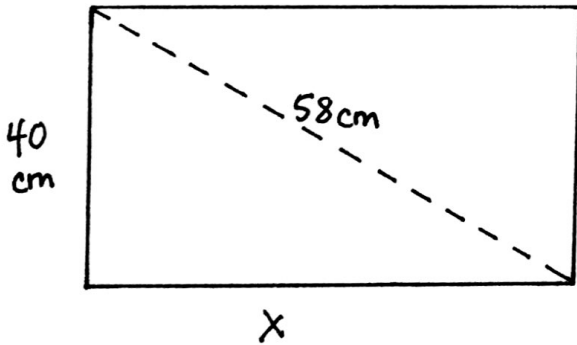
10) A suitcase measures 24 inches long and the diagonal is 30 inches long. How much material is needed to cover one side of the suitcase? *area*



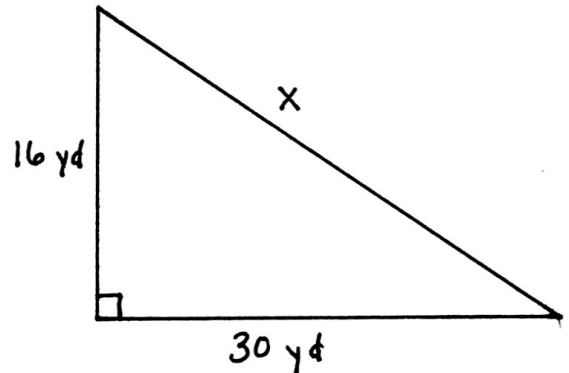
$$\begin{aligned}
 &24 \text{ in} \\
 &A = (18)(24) \\
 &\boxed{A = 432 \text{ in}^2} \\
 x^2 + (24)^2 &= (30)^2 \\
 x^2 + 576 &= 900 \\
 -576 &\quad -576 \\
 \hline
 \sqrt{x^2} &= \sqrt{324} \rightarrow x = 18 \text{ in}
 \end{aligned}$$

11) A recently discovered Picasso painting of a hen measured 58 cm along its diagonal. Its height was 40 cm. How wide is the painting?

$$\begin{aligned}
 (40)^2 + x^2 &= (58)^2 \\
 1600 + x^2 &= 3364 \\
 -1600 &\quad -1600 \\
 \hline
 \sqrt{x^2} &= \sqrt{1764} \rightarrow \boxed{x = 42 \text{ cm}}
 \end{aligned}$$



12) A new park is being built at the intersection of First Avenue and Madison Street. It will be in the shape of a right triangle, with the right angle being at the intersection of the streets. It will span 16 yards along First Avenue, and 30 yards along Madison Street. How long is the third side of the park?



$$\begin{aligned}
 (16)^2 + (30)^2 &= x^2 \\
 \sqrt{1156} &= \sqrt{x^2} \\
 \boxed{34 \text{ yd} = x}
 \end{aligned}$$