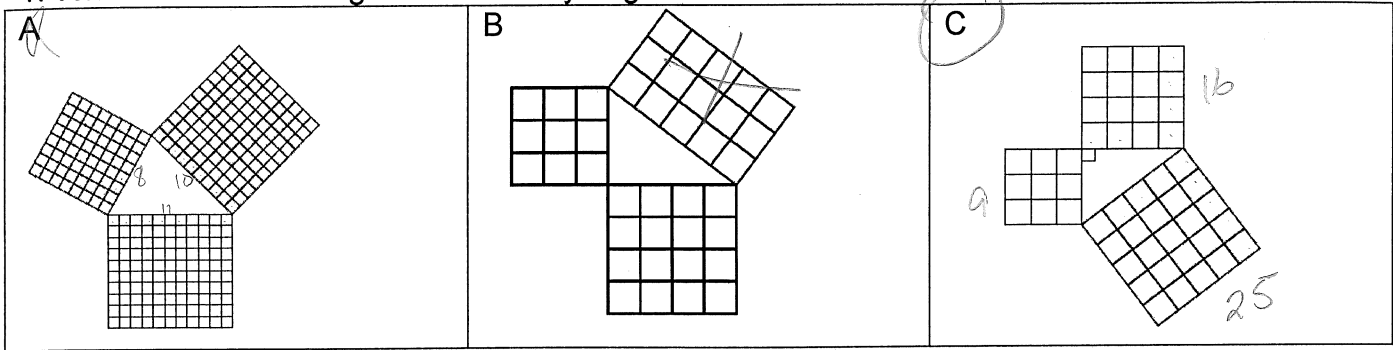
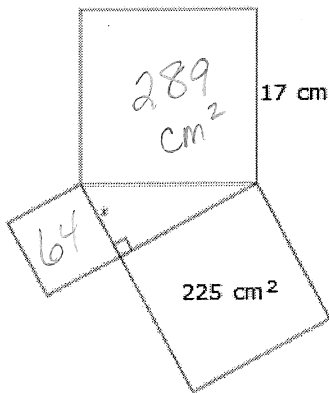


Pythagorean Theorem

1. Which of the following models the Pythagorean Theorem?



2. The right triangle shown below is formed by joining three squares at their vertices. What is the area of the smallest square?



$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 x^2 + 225 &= 17^2 \\
 x^2 + 225 &= 289 \\
 -225 \quad -225 \\
 \hline
 \sqrt{x^2} &= \sqrt{64} \\
 x &= 8
 \end{aligned}$$

$$\begin{aligned}
 \text{Area} &= 8 \times 8 \\
 &= 64 \text{ cm}^2
 \end{aligned}$$

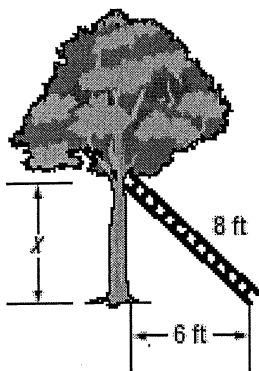
		6	4	.	0	0
0	0	0	0		0	0
1	1	1	1		1	1
2	2	2	2		2	2
3	3	3	3		3	3
4	4	4	4		4	4
5	5	5	5		5	5
6	6	6	6		6	6
7	7	7	7		7	7
8	8	8	8		8	8
9	9	9	9		9	9

3. A triangle has the following measurements: 13 cm, 12 cm, and 5 cm. Is this a right triangle?

$$\begin{aligned}
 5^2 + 12^2 &= 13^2 \\
 25 + 144 &= 169 \\
 169 &= 169 \quad \checkmark
 \end{aligned}$$

Yes, this is a right triangle.

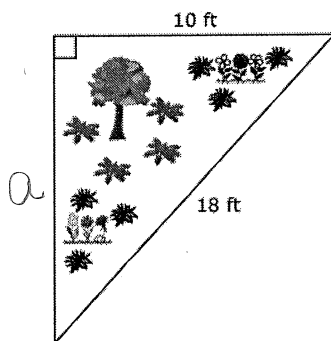
4. Jake is hanging a bird feeder on a tree in his backyard. He leans an eight-foot ladder against the tree as shown. The distance between the tree and the bottom of the ladder is 6 feet. About how high above the ground is the top of the ladder?



$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 x^2 + 6^2 &= 8^2 \\
 x^2 + 36 &= 64 \\
 &\quad -36 \quad -36 \\
 \hline
 \sqrt{x^2} &= \sqrt{28}
 \end{aligned}$$

$$x \approx 5.29 \text{ ft}$$

5. Molly wants to put a fence around an area. The fence will follow the diagram of the triangle shown below. About how much fencing does Molly need?



$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 a^2 + 10^2 &= 18^2 \\
 a^2 + 100 &= 324 \\
 &\quad -100 \quad -100 \\
 \hline
 \sqrt{a^2} &= \sqrt{224}
 \end{aligned}$$

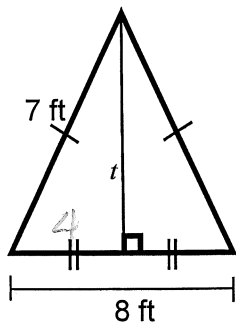
$$a \approx 14.97$$

or about 15

total fencing:
 $15 + 10 + 18 = 43$

$$\text{About } 43 \text{ ft}$$

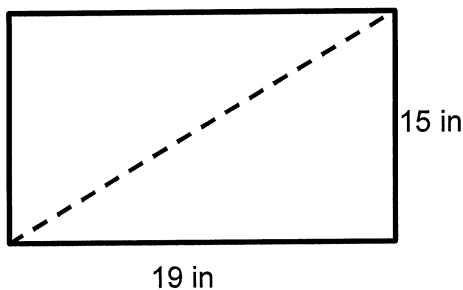
6. Susan and her friends are going on a camping trip at Brazos State Park. She needs to bring her tent however the support pole is broken and she will need to by a new one. Based on the dimensions shown in the figure below, approximately how long is the support pole, t , for Susan's tent?



$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 t^2 + 4^2 &= 7^2 \\
 t^2 + 16 &= 49 \\
 &\quad -16 \quad -16 \\
 \hline
 \sqrt{t^2} &= \sqrt{33}
 \end{aligned}$$

$$t \approx 5.74 \text{ ft}$$

7. A television screen measures approximately 15 inches high and 19 inches wide. A television is advertised by giving the approximate length of the diagonal of its screen. How should this television be advertised?

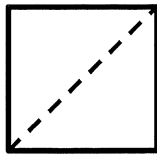


$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 15^2 + 19^2 &= c^2 \\
 225 + 361 &= c^2 \\
 \sqrt{586} &= \sqrt{c^2} \\
 24.2 &\approx c
 \end{aligned}$$

$$24 \text{ inch TV}$$



8. Dominique is completing a project for her math class using a square piece of poster paper. She will take the poster paper and cut it diagonally from one corner to the other to create triangles. If the poster paper has an area of 256 square inches, what is the approximate length of the diagonal she will cut?



Area 256 in²
16 in $\sqrt{256} = 16$ in

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

$$16^2 + 16^2 = c^2$$

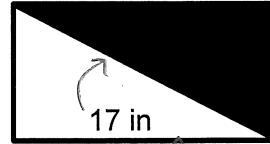
$$256 + 256 = c^2$$

$$\sqrt{512} = c$$

$$22.6 \approx c$$

about 22.6 inches

9. Germany has several flags that consist of two colors separated by a diagonal line as pictured below. If the length of the diagonal is 17 inches and the length of one side is 15 inches, what is the area of the shaded region?



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

$$a^2 + 15^2 = 17^2$$

$$a^2 + 225 = 289$$

$$\frac{-225 \quad -225}{\hline} \sqrt{a^2} = \sqrt{64}$$

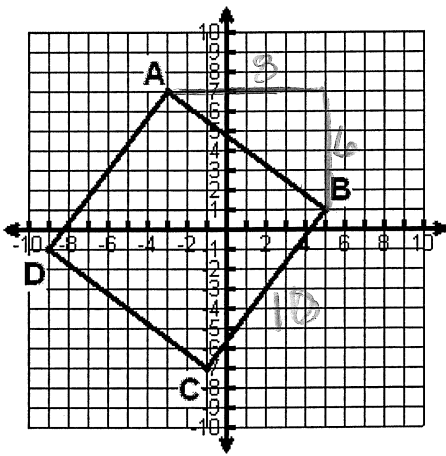
$$a = 8$$

$$A = \frac{1}{2}bh$$

$$A = \frac{1}{2}15 \times 8$$

A = 60 in²

10. Find the area of square ABCD.



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

$$8^2 + 6^2 = c^2$$

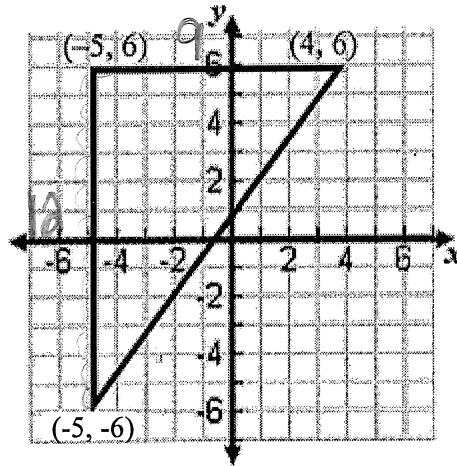
$$64 + 36 = c^2$$

$$\sqrt{100} = c$$

$$10 = c$$

Area: 10 x 10
100 units²

11. Find the length of the hypotenuse.



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

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

$$144 + 81 = c^2$$

$$\sqrt{225} = c$$

$$15 = c$$