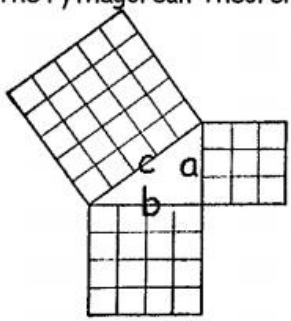
Honors Module 0.7B Cumulative Radicals Name:

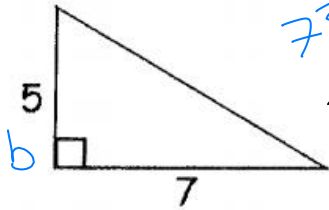
The Pythagorean Theorem



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

Review Question: Find the length of the hypotenuse.

Warmup

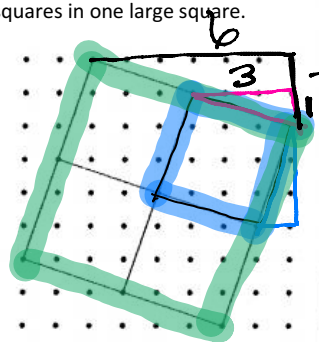


$7^2+5^2=74$

$\sqrt{c^2}=\sqrt{74}$

$c=\sqrt{74}$

Here is a picture of 4 smaller squares in one large square.



$1^2+1^2=2$ $\sqrt{c^2}=\sqrt{2}$ $c=\sqrt{2}$

1.) Use the Pythagorean Theorem to find the side length of one of the smaller squares.

$3^2+1^2=10$

$\sqrt{c^2}=\sqrt{10}$ $c=\sqrt{10}$

2.) Based on your answer in #1, find the side length of the large square.

$\sqrt{10}+\sqrt{10}=2\sqrt{10}$

3.) Use the Pythagorean Theorem to find the side length of the larger square.

$6^2+2^2=40$

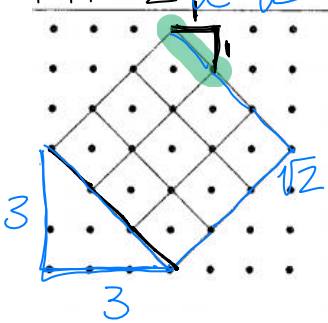
$\sqrt{c^2}=\sqrt{40}$

$2\sqrt{10}$

$\sqrt{40}$

4.) Which two quantities must be equal?

side lengths of large ☐ #2 & #3 $2\sqrt{10}$



5.) What is the area of one of the small squares? (Use any method)

$\sqrt{2}\cdot\sqrt{2}=\sqrt{4}=2$

6.) What is the side length of one of the small squares?

$\sqrt{2}$

7.) Based on your answer in #6, find the side length of the large square.

$3\sqrt{2}$

$\sqrt{2}+\sqrt{2}+\sqrt{2}$

8.) What is the area of the large square?

$3\sqrt{2}\cdot3\sqrt{2}=9\sqrt{4}=18$

9.) What is the side length of the one of the large square?

$\sqrt{c^2}=\sqrt{18}$

$3^2+3^2=18$ $c=3\sqrt{2}$

10.) Which two quantities must be equal?

#7 & #9 measuring the same thing

Simplify the following radicals. Be sure you SHOW YOUR WORK!

7) $\sqrt{9x^2}$

8) $-\sqrt{49x^2}$

9) $\sqrt{4x^2y^2}$

1) $-\sqrt{28x^4}$

2) $\sqrt{16xy^2}$

3) $-\sqrt{20xy^2}$

4) $2\sqrt{50ab^5}$

5) $8\sqrt{300a^4b^6}$

6) $5\sqrt{98a^{20}b^3}$

10) $5\sqrt{2} + 8\sqrt{5} - 8\sqrt{2}$

11) $\sqrt{3}(\sqrt{8} - 3\sqrt{15})$

12) $\sqrt{12} - 5\sqrt{3} + \sqrt{14}$

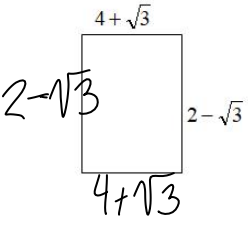
13) $\sqrt{75} + 2\sqrt{45} - 9\sqrt{3}$

14) $(\sqrt{2}+8)(\sqrt{2}+3)$

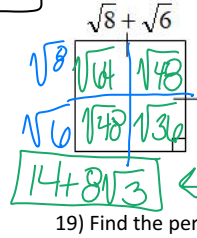
15) $(2\sqrt{7}+4)(5\sqrt{7}-11)$

Read the directions for each. Show all your work!

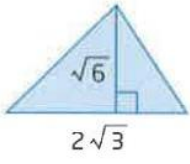
16) Find the perimeter for the following rectangle.



17) Find the area for the square below.

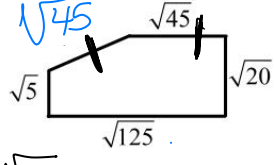


18) Find the area for the triangle provided.



19) Find the perimeter for the polygon below.

Simplify!



5) $8\sqrt{300a^4b^6}$