# Review 8-2 to 8-3

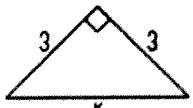
Name _____

Date _____ Block _____

**Pythagorean Theorem: $a^2 + b^2 = c^2$** **Find x.**

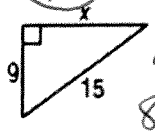
*Write irrational answers in simplified radical form AND in decimal form rounded to the nearest tenth.*

**1.**




$3\sqrt{2}$

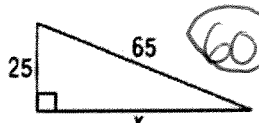
**2.**




12

$9^2+x^2=15^2$
$81+x^2=225$
$x^2=144$
$x=12$

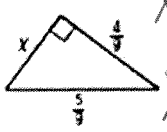
**3.**




60

$25^2+x^2=65^2$
$625+x^2=4225$
$x^2=3600$

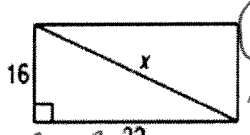
**4.**




$\frac{3}{9}$

$x^2+\left(\frac{4}{9}\right)^2=\left(\frac{5}{9}\right)^2$
$x^2+\frac{16}{81}=\frac{25}{81}$
$x^2=\frac{9}{81}$

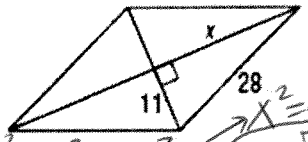
**5.**




$\sqrt{1345}$
$\approx 36.7$

$16^2+33^2=x^2$
$1345=x^2$

**6.**




$x^2=663$
$x=\sqrt{663}$

$x^2+11^2=28^2$

$\approx 25.7$

**Converse of the Pythagorean Theorem:** **Determine whether each set of measures can be the sides of a right, obtuse, or acute triangle. If it is a right triangle, then state whether the sides form a Pythagorean Triple.**

**7.** 30, 40, 50

$50^2$ $30^2+40^2$

$2500 = 2500$

Right Δ & P.T.

**8.** 20, 30, 40

$40^2$ $20^2+30^2$

$1600 > 1300$

Obtuse Δ

**9.** 18, 24, 30

$30^2$ $18^2+24^2$

$900 = 900$

Rt Δ & P.T.

**10.** 6, 8, 9

$9^2$ $6^2+8^2$

$81 < 100$

Acute Δ

**11.** $\frac{3}{7}, \frac{4}{7}, \frac{5}{7}$

$\left(\frac{5}{7}\right)^2$ $\left(\frac{3}{7}\right)^2+\left(\frac{4}{7}\right)^2$

$\frac{25}{49} = \frac{25}{49}$

Rt Δ

**12.** 10, 15, 20

$20^2$ $10^2+15^2$

$400 > 325$

Obtuse Δ

**13.** $\sqrt{5}, \sqrt{12}, \sqrt{13}$

$(\sqrt{13})^2$ $(\sqrt{5})^2+(\sqrt{12})^2$

$13 < 17$

Acute Δ

**14.** $2, \sqrt{8}, \sqrt{12}$

$(\sqrt{12})^2$ $2^2+\sqrt{8}^2$

$12 = 12$

Rt. Δ

**15.** 9, 40, 41

$41^2$ $9^2+40^2$

$1681 = 1681$

Rt Δ & P.T.

**Pythagorean Triples:** A family of Pythagorean triples consists of multiples of known triples. For each Pythagorean triple, find two triples in the same family.

**16.** 3, 4, 5

6, 8, 10

9, 12, 15

**17.** 5, 12, 13

10, 24, 26

15, 36, 39

**18.** 7, 24, 25

14, 48, 50

21, 72, 75

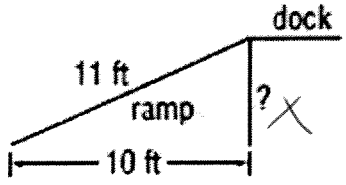
**Application Problem:**

**19.** The bottom end of a ramp at a warehouse is 10 feet from the base of the main dock and is 11 feet long. How high is the dock?

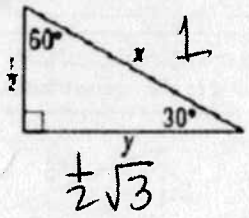
$x^2+10^2=11^2$
$x^2+100=121$
$x^2=21$

$\sqrt{21} \approx 4.58$

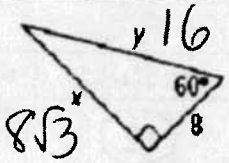
4.6 feet high



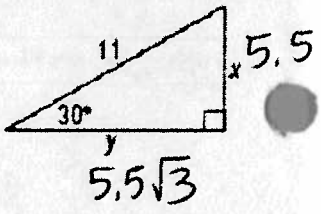
**Special Right Triangles: 30° - 60° - 90° Find x and y.**

20. 

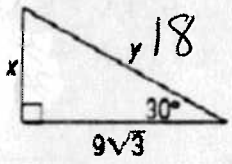
$\frac{1}{2}\sqrt{3}$

21. 

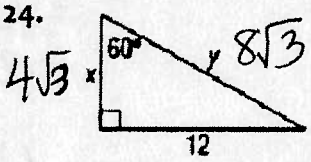
$8\sqrt{3}$

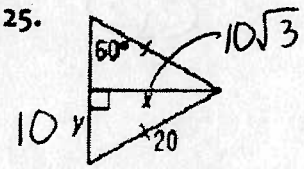
22. 

$5.5\sqrt{3}$

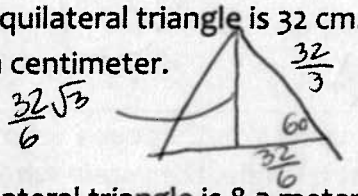
23. 

$9\sqrt{3}$

24. 

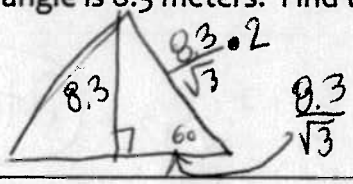

25. 


26. The perimeter of an equilateral triangle is 32 cm. Find the length of an altitude of the triangle to the nearest tenth of a centimeter.



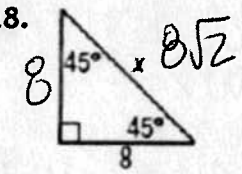

$\approx$ 9.2 cm.

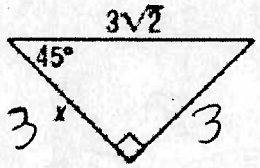
27. An altitude of an equilateral triangle is 8.3 meters. Find the perimeter of the triangle to the nearest tenth of a meter.

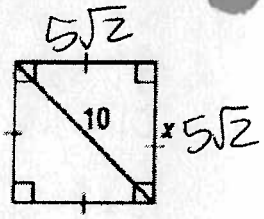


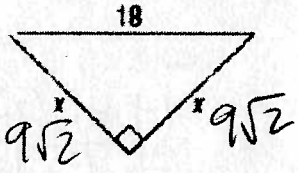

$\frac{16.6}{\sqrt{3}} \cdot 3$ side $\approx$ 28.8 m

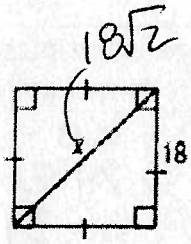
**Special Right Triangles: 45° - 45° - 90° Find x.**

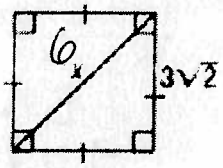
28. 


29. 

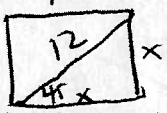

30. 


31. 


32. 


33. 

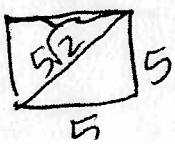

34. Find the perimeter of a square with a diagonal that measures 12 centimeters.




$6\sqrt{2}$ each side $\cdot 4 = 24\sqrt{2}$ or $\approx$ 33.9 cm

35. Find the diagonal of a square with a perimeter of 20 inches.

Side = $20 \div 4 = 5$




$5\sqrt{2}$