7.1 Skill Practice
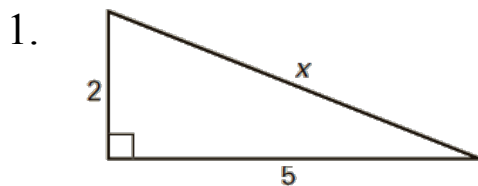
1. Pythagorean triple

2. A right triangle, the measure of a leg of the triangle, and the measure of either the hypotenuse or the other leg.

3. 130

4. 65

5. 58

6. a and b represent the legs of the triangle, but 26 is the hypotenuse; $10^2 + 24^2 = 26^2$.

7. In step 2, the Distributive Property was used incorrectly;
$x^2 = 49 + 576$
$x^2 = 625$
$x = 25$.

8. about 14.1 ft

9. about 9.14 in.

10. about 2.91 ft

11. 120 m^2 12. 192 ft^2

13. 48 cm^2 14. 75

15. 40   16. 32

17. B   18. 45, leg

19. 15, leg

20. 100, hypotenuse

21. 52, hypotenuse

22. 40, leg   23. 21, leg

24. $3\sqrt{5}$ 25. $11\sqrt{2}$

26. $\sqrt{65}$

Warm Up

Solve for x.

1.
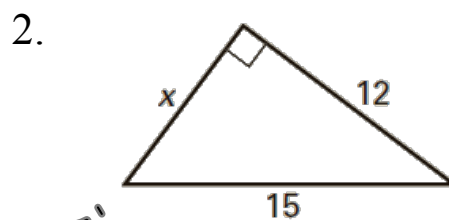

2.

$2^2 + 5^2 = x^2 \quad x^2 = 29$
$4 + 25$
$\boxed{x = \sqrt{29}}$
$\boxed{x \approx 5.39}$

3.   Simplify: $\left(5\sqrt{3}\right)^2$

$5\sqrt{3} \cdot 5\sqrt{3}$

$25 \cdot 3 = \boxed{75}$

$x^2 + 12^2 = 15^2$
$x^2 = 225 - 144$
$x^2 = 81$
$\boxed{x = 9}$

7-2   Notes on the Converse of the
           Pythagorean Theorem

If $c^2 = a^2 + b^2$, then ABC is a right triangle.

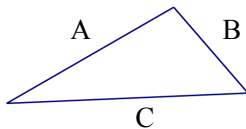If $c^2 < a^2 + b^2$, then ABC is an acute triangle.

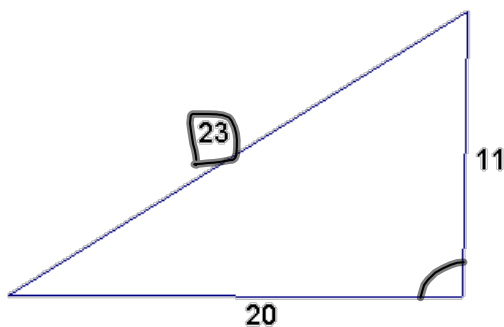If $c^2 > a^2 + b^2$, then ABC is an obtuse triangle.

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

Reminder:
       to form a triangle the sum of any 2 sides is greater
       than the third one

A   B

C

$$A + B > C$$
$$B + C > A$$
$$C + A > B$$

Ex 1   Is the given triangle a right triangle? If not, what kind of
           triangle is it?

23
11
20

$$a^2 + b^2 \overset{?}{=} c^2$$

$$c^2 \overset{?}{=} a^2 + b^2$$

$$23^2 \overset{?}{=} 11^2 + 20^2$$

$$529 \overset{?}{=} 121 + 400$$

$$521$$

No

Obtuse Triangle

Ex 2   Is the given triangle a right triangle? If not, what
        kind of triangle is it?

20

12

16

Yes
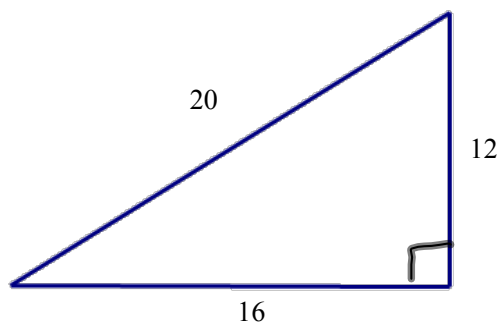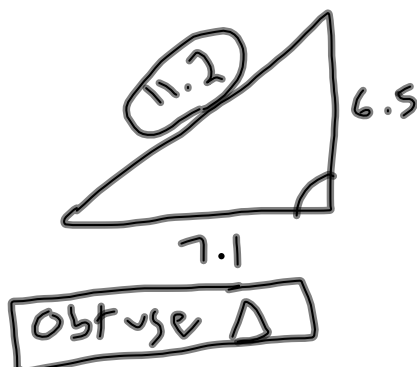
$$a^2 + b^2 \overset{?}{=} c^2$$

$$12^2 + 16^2 \overset{?}{=} 20^2$$

$$144 + 256 = 400$$

$$\cancel{400} = 400$$

Ex 3   Can segments with lengths 11.2, 6.5, and
        7.1 form a triangle? If so, would it be
        acute, right, or obtuse?

11.2

6.5

7.1

Obtuse △

Yes

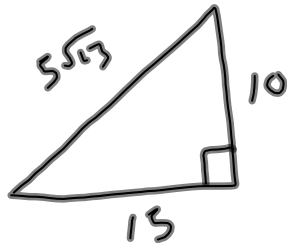$$c^2 = a^2 + b^2$$

$$11.2^2 \overset{?}{=} 6.5^2 + 7.1^2$$

$$123.44 \overset{?}{=} 42.25 + 50.41$$

$$123.44 > 92.66$$

Ex 4   Can segments with lengths 10, 15, and $5\sqrt{13}$ form a triangle? If so, would it be acute, right, or obtuse?

18.03   Yes.
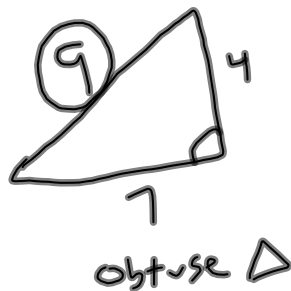
$$c^2 \stackrel{?}{=} a^2 + b^2$$

$$(5\sqrt{13})^2 \stackrel{?}{=} 10^2 + 15^2$$

$$25 \cdot 13 \quad \begin{array}{c} ? \\ > \end{array} \quad 100 \quad 225$$

$$325 \stackrel{?}{=} 325$$

Right $\triangle$

Ex. 5   Classify the triangle with sides 4, 7, and 9 as acute, right, or obtuse.

$$9^2 \stackrel{?}{=} 4^2 + 7^2$$

$$81 \stackrel{?}{=} 16 + 49$$

$$81 > 75$$

obtuse $\triangle$

Without a calculator, classify the triangle with sides 8, 14, and 18 as acute, right, or obtuse.

Obtuse $\triangle$ 3, 4, 5

                                        6, 8, 10

                                        9, 12, 15