Name _____ Date _____

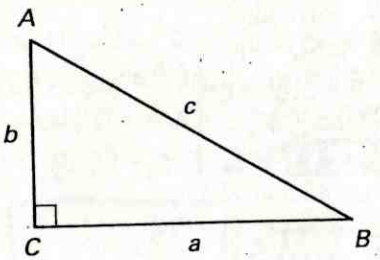
LESSON 7.1

Practice

For use with pages 432–439

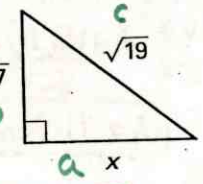
$c^2 = a^2 + b^2$

Use △*ABC* to determine if the equation is *true* or *false*.

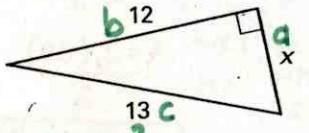


1. $b^2 + a^2 = c^2$
   True
2. $c^2 - a^2 = b^2$
   True
3. $b^2 - c^2 = a^2$
   False b/c $c^2 - b^2 = a^2$
4. $c^2 = a^2 - b^2$
   False b/c $c^2 = a^2 + b^2$
5. $c^2 = b^2 + a^2$
   True
6. $a^2 = c^2 - b^2$
   True

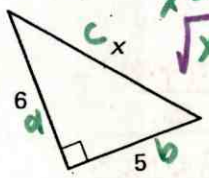
Find the unknown side length. Simplify answers that are radicals. Tell whether the side lengths form a Pythagorean triple.

7. 

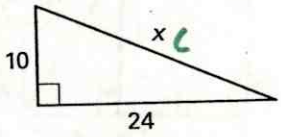
$(\sqrt{19})^2 = x^2 + (\sqrt{7})^2$
$19 = x^2 + 7$
$\sqrt{12} = \sqrt{x^2}$
$x = \sqrt{12}$
$x = 2\sqrt{3}$

8. 

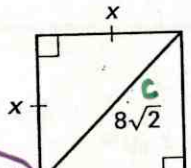
$13^2 = x^2 + 12^2$
$169 = x^2 + 144$
$\sqrt{25} = \sqrt{x^2}$
$x = 5$
Pyth. Triple

9. 

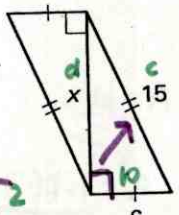
$x^2 = 6^2 + 5^2$
$x^2 = 36 + 25$
$\sqrt{x^2} = \sqrt{61}$
$x = \sqrt{61}$

10. 

$x^2 = 10^2 + 24^2$
$x^2 = 100 + 576$
$\sqrt{x^2} = \sqrt{676}$
$x = 26$
Triple

11. 

$(8\sqrt{2})^2 = x^2 + x^2$
$64(2) = 2x^2$
$\frac{128}{2} = \frac{2x^2}{2}$
$\sqrt{64} = \sqrt{x^2}$
$x = 8$

12. 

$15^2 = x^2 + 6^2$
$225 = x^2 + 36$
$\sqrt{189} = \sqrt{x^2}$
$x = \sqrt{189}$
$x = 3\sqrt{21}$

The given lengths are two sides of a right triangle. All three side lengths of the triangle are integers and together form a Pythagorean triple. Find the length of the third side and tell whether it is a leg or the hypotenuse.

check for the longest given side being c, then check if c was missing.

13. 40 and 41
$41^2 = a^2 + 40^2$
$1681 = a^2 + 1600$
$\sqrt{81} = \sqrt{a^2}$
$a = 9$ ✓

14. 12 and 35
$c^2 = 40^2 + 41^2$

15. 63 and 65
$65^2 = a^2 + 63^2$
$4225 = a^2 + 3969$
$256 = a^2$
$a = 16$ ✓

$c^2 = 63^2 + 65^2$
$c^2 = 3969 + 4225$
$c^2 = 8194$
c = not a perfect square

Name _____ Date _____

LESSON 7.1

Practice *continued*

For use with pages 432–439

16. 28 and 45

$45^2 = 28^2 + b^2$
$2025 = 784 + b^2$
$1241 = b^2$
$b = 35.22$

$c^2 = 28^2 + 45^2$
$c^2 = 784 + 2025$
$c^2 = 2809$
$c = 53$ hypotenuse

17. 56 and 65

$65^2 = 56^2 + b^2$
$4225 = 3136 + b^2$
$1089 = b^2$
$b = 33$ leg

$c^2 = 56^2 + 65^2$
$c^2 = 3136 + 4225$
$c^2 = 7361$
$c = 85.8$

18. 20 and 29

$= 21$, leg

19. 80 and 89

$= 39$, leg

20. 48 and 55

$= 73$, hypotenuse

21. 65 and 72

$= 97$, hypotenuse

$A = \frac{bh}{2}$ → altitude

Find the area of a right triangle with given leg ℓ and hypotenuse h. Round decimal answers to the nearest tenth.

22. $\ell = 8$ m, $h = 16$ m

$16^2 = x^2 + 8^2$
$256 = x^2 + 64$
$\sqrt{192} = \sqrt{x^2}$
$x = 13.9$

23. $\ell = 9$ yd, $h = 12$ yd

$12^2 = 9^2 + x^2$
$144 = 81 + x^2$
$x^2 = 63$
$x = 7.9$

$A = \frac{13.9(8)}{2}$
$A = 55.4\text{ m}^2$

24. $\ell = 3.5$ ft, $h = 9$ ft

$9^2 = 3.5^2 + x^2$
$81 = 12.25 + x^2$
$x^2 = 68.75$
$x = 8.3$

$A = \frac{9(7.9)}{2}$
$A = 35.7\text{ yd}^2$

$A = \frac{(3.5)(8.3)}{2}$
$A = 14.5\text{ ft}^2$

hypotenuse, height, leg 1

25. $\ell = 9$ mi, $h = 10$ mi

$10^2 = 9^2 + x^2$
$100 = 81 + x^2$
$x^2 = 19$
$x = 4.4$

$A = \frac{9(4.4)}{2}$
$A = 19.6\text{ mi}^2$

26. $\ell = 21$ in., $h = 29$ in.

$29^2 = 21^2 + x^2$
$841 = 441 + x^2$
$400 = x^2$
$x = 20$

$A = \frac{21(20)}{2}$
$A = 210\text{ in}^2$

27. $\ell = 13$ cm, $h = 17$ cm

$17^2 = 13^2 + x^2$
$289 = 169 + x^2$
$120 = x^2$
$x = 11$
$x = 10.95$

$A = \frac{13(11)}{2}$
$A = 71.5\text{ cm}^2$

base, leg 2

Find the area of the figure. Round decimal answers to the nearest tenth.

28.

7 ft, 10 ft, x

$10^2 = x^2 + 7^2$
$100 = x^2 + 49$
$51 = x^2$
$x = 7.1$

$A = \frac{bh}{2}$
$A = \frac{7.1(7)}{2}$
$A = 24.9\text{ ft}^2$

29.

4 cm, 12 cm, x, 4

$12^2 = x^2 + 4^2$
$144 = x^2 + 16$
$128 = x^2$
$x = 11.3$

$A = \frac{8(11.3)}{2}$
$A = 45.2\text{ cm}^2$

30.

11 in., 14 in., 14, 11, 20 in.

$A(\square) + A(\Delta)$
$\ell w + \frac{bh}{2}$
$11(14) + \frac{9(14)}{2}$
$154 + 63$
$A = 217\text{ in}^2$

$20 - 11 = 9$

31.

26 m, 30 m, 24, 24, 26, x, x, 18, 62 m, 18

$x + 26 + x = 62$
$2x + 26 = 62$
$2x = 36$
$x = 18$

$30^2 = y^2 + 18^2$
$900 = y^2 + 324$
$\sqrt{576} = \sqrt{y^2}$
$y = 24$

$A(\square) = 26(24) = 624$
$A(\Delta) = \frac{18(24)}{2} = 216$

32.

3 in., 4 in., 10, 13 in., 13 − 3 = 10

$A(\square) = 3(4) = 12$
$A(\Delta) = \frac{4(10)}{2} = 20$
$A = 12 + 20$
$A = 32\text{ in}^2$

33.

20 ft, 16 ft, 10 ft, x, 12

base = 24

$20^2 = 16^2 + x^2$
$400 = 256 + x^2$
$144 = x^2$
$x = 12$

$A = 192 + 120$
$A = 312\text{ ft}^2$

$\square + \Delta + \Delta$
$A = 624 + 216 + 216$
$A = 1056\text{ in}^2$

$A(\Delta_1) = \frac{24(16)}{2} = 192\text{ ft}^2$

$A(\Delta_2) = \frac{24(10)}{2} = 120\text{ ft}^2$