Pythagorean Theorem practice problems   Key

Find the length of the hypotenuse. — the longest side (c)

1. $4^2 + 5^2 = c^2$

① $4^2 + 5^2 = c^2$
$16 + 25 = c^2$
$\sqrt{41} = \sqrt{c^2}$
$\sqrt{41} = c$
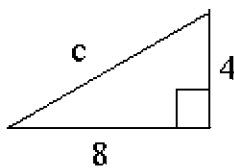
2. $7^2 + 2^2 = c^2$

② $7^2 + 2^2 = c^2$
$49 + 4 = c^2$
$\sqrt{53} = \sqrt{c^2}$
$\sqrt{53} = c$

Find the length of the third side of each right triangle.

3.

c, 4, 8

③ $a^2 + b^2 = c^2$
$4^2 + 8^2 = c^2$
$16 + 64 = c^2$
$\sqrt{80} = \sqrt{c^2}$
$\sqrt{80} = c$

④ $a^2 + b^2 = c^2$
$11^2 + b^2 = 14^2$
$121 + b^2 = 196$
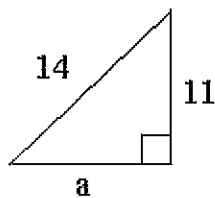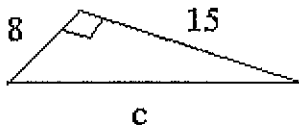$-121 \qquad -121$
$b^2 = 75$
$b = \sqrt{75}$

4.

14, 11, a

⑤ $a^2 + b^2 = c^2$
$8^2 + 15^2 = c^2$
$64 + 225 = c^2$
$289 = c^2$
$17 = c$

5.

8, 15, c

Find the length of the side not given when the hypotenuse is c and the legs are a and b.

6. a = 10, b = 24

⑥ $10^2 + 24^2 = c^2$
$100 + 576 = c^2$
$676 = c^2$
$\sqrt{676} = c$

⑦ $9^2 + b^2 = 13^2$
$81 + b^2 = 169$
$-81 \qquad -81$
$b^2 = 88$
$b = \sqrt{88}$

7. a = 9, c = 13

8. b = 18, c = 30

⑧ $a^2 + 18^2 = 30^2$
$a^2 + 324 = 900$
$-324 \quad -324$
$a^2 = 576$
$a = 24$

9. a = 5, b = 12

⑨ $5^2 + 12^2 = c^2$
$25 + 144 = c^2$
$169 = c^2$
$13 = c$

10. a = 6, c = 10

⑩ $6^2 + b^2 = 10^2$
$36 + b^2 = 100$
$-36 \qquad -36$
$b^2 = 64$
$b = 8$