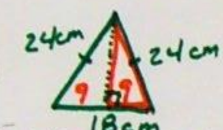
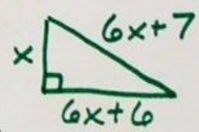
Using the Pythagorean Theorem

Make a diagram for each problem. Simplify (if possible) your solutions. Approximate to the nearest tenth.

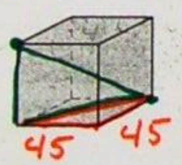
1. Find the length of each diagonal of a rectangle whose dimensions are 33 cm by 56 cm.
2. A guywire 20 m long is attached to the top of a telephone pole. The guywire is just able to reach a point on the ground 12 m from the base of the telephone pole. Find the height of the telephone pole.
3. A baseball diamond is a square 90 ft on a side. What is the length from first base to third base?
4. The dimensions of a rectangular doorway are 200 cm by 90 cm. Can a table top with a diameter of 210 cm be carried through the doorway?
5. The base of an isosceles triangle is 18 cm long. The equal sides are each 24 cm long. Find the altitude.



6. A right triangle has sides whose lengths in feet are consecutive even integers. Determine the length of each side.
7. The longer leg of a right triangle is 6 cm longer than 6 times the shorter leg and also 1 cm shorter than the hypotenuse. Find the perimeter of the triangle.



8. Find the area of a triangle with three sides of length 4 cm. (*Hint:* Find the height first.)
9. What is the length of each diagonal of a cube that is 45 cm on each side?



10. What is the length of each diagonal of a rectangular box with length 55 cm, width 48 cm, and height 70 cm? Would a meter stick fit in the box?

Simplify.

1) $\sqrt{125n}$ 2) $\sqrt{216v}$ 3) $\sqrt{512k^2}$ 4) $\sqrt{512m^3}$

5) $\sqrt{216k^4}$ 6) $\sqrt{100v^3}$ 7) $\sqrt{80p^3}$ 8) $\sqrt{45p^2}$

15) $\sqrt{36x^2y^3}$ 16) $\sqrt{384x^4y^3}$ 17) $7\sqrt{96m^3}$ 18) $6\sqrt{72x^2}$

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

WS Using the Pythagorean Theorem

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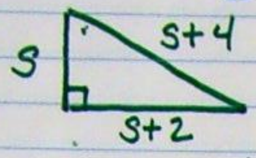

$$s^2 + (s+2)^2 = (s+4)^2$$

$$s^2 + (s+2)(s+2) = (s+4)(s+4)$$

$$s^2 + \cancel{s^2} + 4s + 4 = \cancel{s^2} + 8s + 16$$

$$s^2 - 4s - 12 = 0$$

$$(s-6)(s+2) = 0$$

$$s = 6 \qquad \cancel{s = -2}$$ (Doesn't make sense.)

s =	6 ft
s+2 =	8 ft
s+4 =	10 ft