

① $680 = 2x^3 - 6$

② $10x^2 - 10 = 470$

③ $\frac{9}{4}x^2 = \frac{1}{4}$

④ $x^2 - 5 = -4$

⑤ Find the missing side

$a = 6 \quad c = 10$

⑥ Find the missing side

$a = 4 \quad b = 9$

⑦ Find the missing side

$b = 15 \quad c = 17$

⑧ Triangle or Not?

$12, 16, 10$

⑨ Triangle or NOT?

$4, 6, 6$

⑩ The perimeter of a square is 40m. What is the length of its diagonal?

⑪ A ladder is leaning on a house. The ladder touches the house 9 ft from the ground. The ladder is 4 ft away from base of the house. How long is the ladder?

⑫ I leave my house and walk 7 ft due north and then 9 ft due east. How far am I away from my house?

⑬ Find the distance
 $(2, 3)$ $(-5, 3)$

⑭ Find the distance
 $(-6, -2)$ $(-3, -8)$

Answers

- ① $x = 7$
- ② $\pm\sqrt{48} \approx \pm 7$
- ③ $\pm\frac{1}{3}$
- ④ ± 1
- ⑤ $b = 8$ units
- ⑥ $c = \sqrt{97} \approx 10$ units
- ⑦ $a = 8$ units
- ⑧ NOT Δ
- ⑨ NOT leg \neq hypotenuse
- ⑩ $\sqrt{200} \approx 14$ m
- ⑪ $\sqrt{97} \approx 10$ ft
- ⑫ $\sqrt{130} \approx 11$ ft
- ⑬ $\sqrt{85} \approx 9$ units
- ⑭ $\sqrt{45} \approx 7$ units

$$\begin{aligned} \textcircled{1} \quad 680 &= 2 \times 3 - 6 \\ &\quad + 6 \quad + 6 \\ \hline 686 &= \frac{2 \times 3}{2} \\ \hline \sqrt[3]{343} &= \sqrt[3]{\cancel{3}^3} \\ \hline \boxed{x = 7} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad 10x^2 - 10 &= 470 \\ &\quad + 10 \quad + 10 \\ \hline 10x^2 &= \frac{480}{10} \\ \hline \sqrt{x^2} &= \sqrt{48} \\ x &= \pm\sqrt{48} \approx \pm 7 \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad 4 \cdot \frac{9}{4} x^2 &= \frac{1}{4} \cdot \frac{4}{9} \\ \hline \sqrt{x^2} &= \sqrt{\frac{1}{9}} \\ x &= \pm\frac{1}{3} \end{aligned}$$

$$\begin{aligned} \textcircled{4} \quad x^2 - 5 &= -4 \\ &\quad + 5 \quad + 5 \\ \hline \sqrt{x^2} &= \sqrt{1} \\ x &= \pm 1 \end{aligned}$$

* Musical Math

$$\textcircled{5} a=6 \quad c=10$$

$$6^2 + b^2 = 10^2$$

$$36 + b^2 = 100$$

$$\begin{array}{r} 36 + b^2 = 100 \\ -36 \quad -36 \\ \hline \end{array}$$

$$\sqrt{b^2} = \sqrt{64}$$

$$b = 8$$

$$\textcircled{7} b=15 \quad c=17$$

$$225 + a^2 = 289$$

$$\begin{array}{r} 225 + a^2 = 289 \\ -225 \quad -225 \\ \hline \end{array}$$

$$\sqrt{a^2} = \sqrt{64}$$

$$a = 8$$

$$\textcircled{9} \Delta? \quad 4, 6, 6$$

$$16 + 36 = 36$$

$$52 \neq 36$$

Can't have leg/hypotenuse same size!

$$\textcircled{11} \begin{array}{c} \triangle \\ \text{9ft} \\ \text{4ft} \end{array} \quad \begin{array}{l} 9^2 + 4^2 = c^2 \\ 81 + 16 \end{array}$$

$$C = \sqrt{97} \approx 10 \text{ft} \quad \sqrt{97} = \sqrt{c^2}$$

$$\textcircled{13} \quad (2, -3) \quad (-5, 3)$$

$$\sqrt{(-5-2)^2 + (3-(-3))^2}$$

$$\sqrt{(-7)^2 + (6)^2}$$

$$\sqrt{49 + 36}$$

$$\sqrt{85} \approx 9$$

$$\textcircled{6} a=4 \quad b=9$$

$$16 + 81 = c^2$$

$$\sqrt{97} = \sqrt{c^2}$$

$$C = \sqrt{97} \approx 10$$

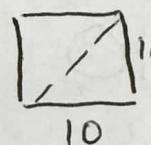
$$\textcircled{8} \Delta? \quad 12, 16, 10$$

$$100 + 144 = 256$$

NOT

$$244 \neq 256$$

$$\textcircled{10}$$



$$P = 40$$

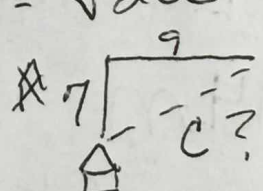
so each side is 10 m

$$100 + 100 = c^2$$

$$\sqrt{200} = \sqrt{c^2}$$

$$C = \sqrt{200} \approx 14$$

$$\textcircled{12}$$



$$49 + 81 = c^2$$

$$\sqrt{130} = c^2$$

$$\textcircled{1} \quad (-6, -2) \quad \textcircled{2} \quad (-3, -8)$$

$$C = \sqrt{130} \text{ ft}$$

$$11 \text{ ft}$$

$$\textcircled{14}$$

$$\sqrt{(-3-(-6))^2 + (-8-(-2))^2}$$

$$\sqrt{(+3)^2 + (-6)^2}$$

$$\sqrt{9 + 36}$$

$$\sqrt{45} \approx 7$$