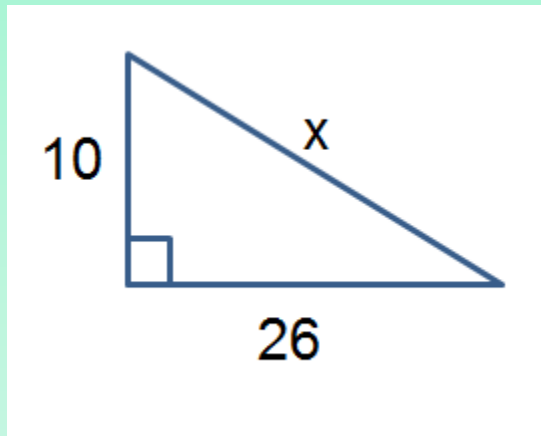
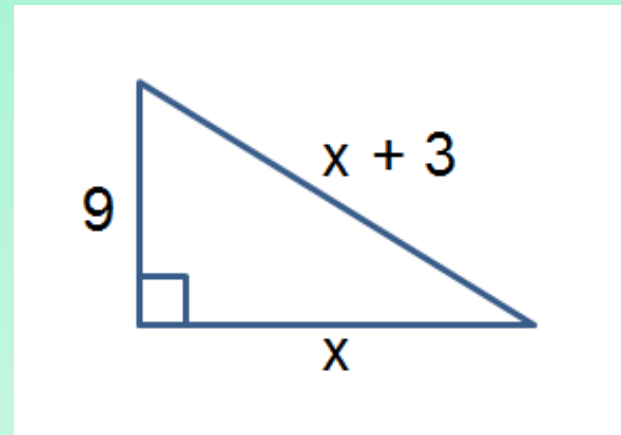


Station 1

1. find the value of x .
Answer should be exact.



2. find the value of x .
Answer should be exact.



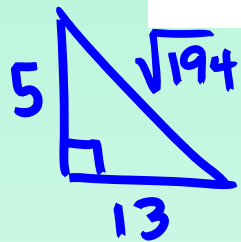
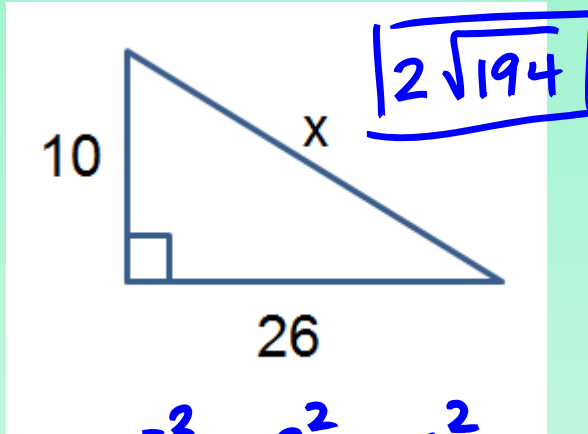
no calculator



Station 1

1. find the value of x . 2. find the value of x .

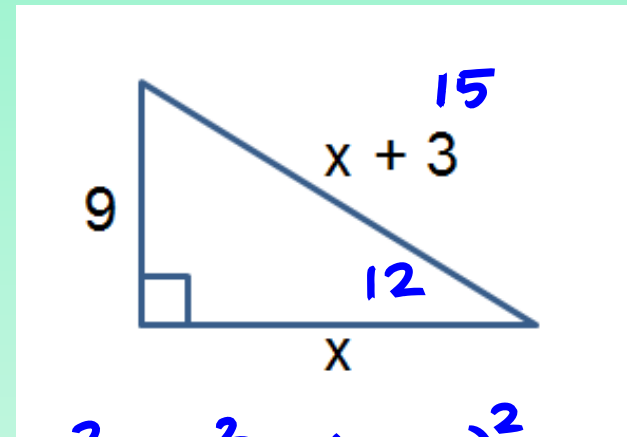
Answer should be exact.



$$\begin{aligned}
 5^2 + 13^2 &= c^2 \\
 25 + 169 &= c^2 \\
 194 &= c^2 \\
 \pm\sqrt{194} &= c \\
 2 \hat{=} 97
 \end{aligned}$$

no calculator $c = \sqrt{194}$

Answer should be exact.



$$\begin{aligned}
 x^2 + 9^2 &= (x+3)^2 \\
 \cancel{x^2} + 81 &= \cancel{x^2} + 6x + 9
 \end{aligned}$$

$$72 = 6x$$

$$12 = x$$



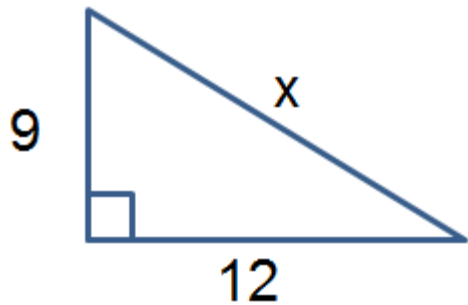
Station 2



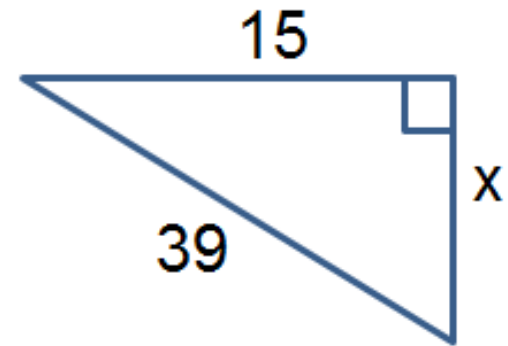
3. find the missing side lengths.

Answers should be exact.

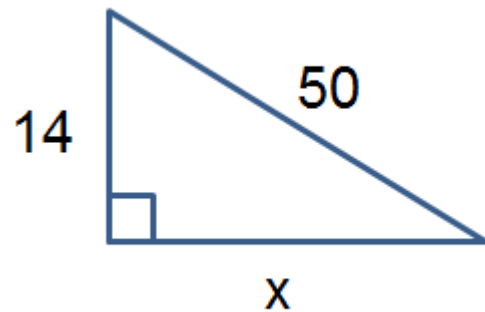
a)



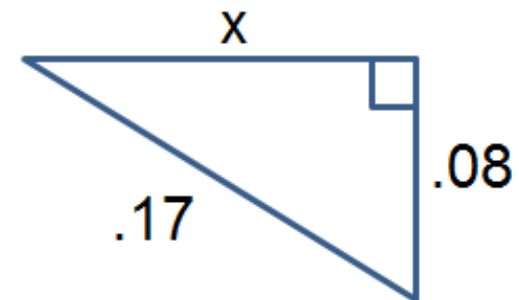
b)



c)



d)



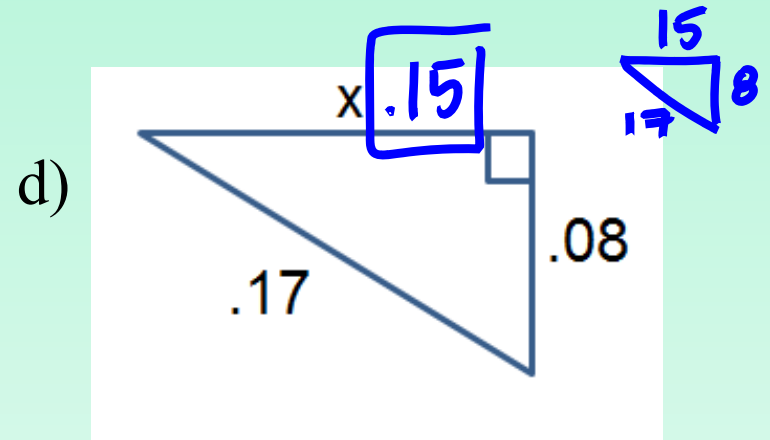
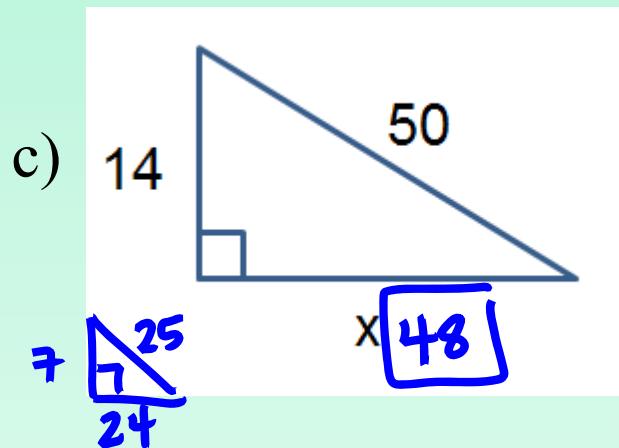
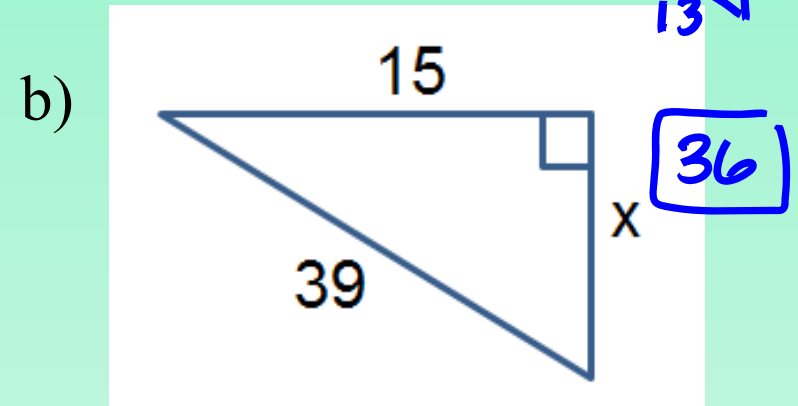
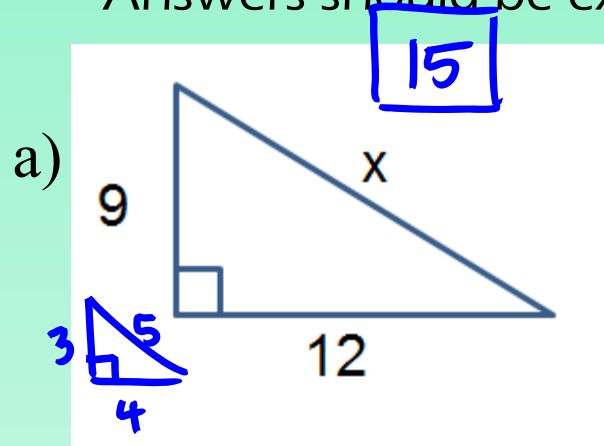
no calculator

Station 2



3. find the missing side lengths.

Answers should be exact.



NO CALCULATOR

Station 3

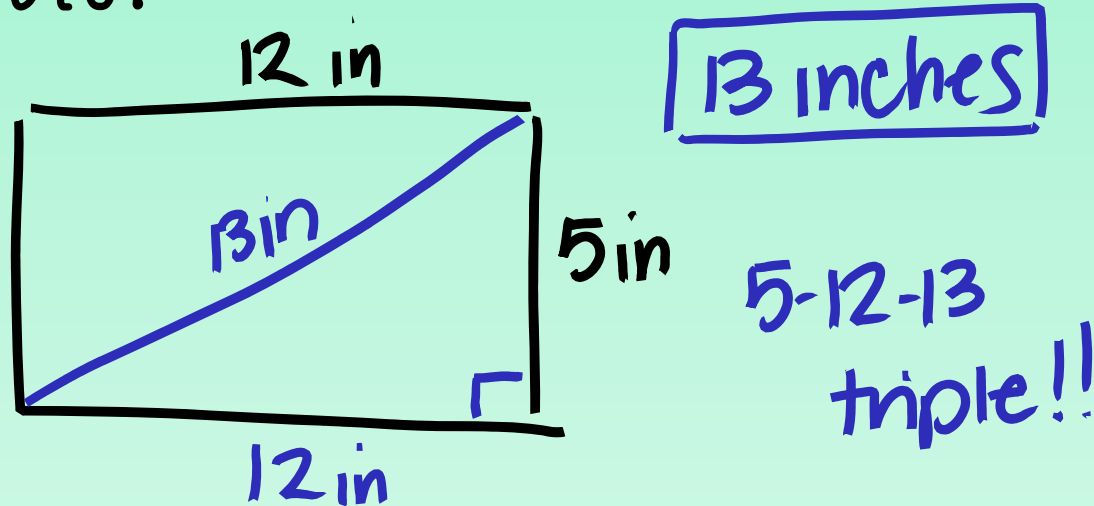
4. find the length of the diagonal of a 5 by 12 inch rectangle.



no calculator

Station 3

4. find the length of the diagonal of a 5 by 12 inch rectangle.



no calculator

Station 4

5. SIMPLIFY THE RADICALS BELOW.

a) $(6\sqrt{2})^2$

b) $\frac{\sqrt{28}}{\sqrt{7}}$



CALCULATOR OK FOR
PART a 😊 BUT NOT
FOR PART b ☹️

Station 4

5. SIMPLIFY THE RADICALS BELOW.

$$a) (6\sqrt{2})^2$$

$$6^2 \sqrt{2}^2$$

$$36 \cdot 2$$

$$\boxed{78}$$

$$b) \frac{\sqrt{28}}{\sqrt{7}}$$

$$\sqrt{\frac{28}{7}}$$

$$\sqrt{4}$$

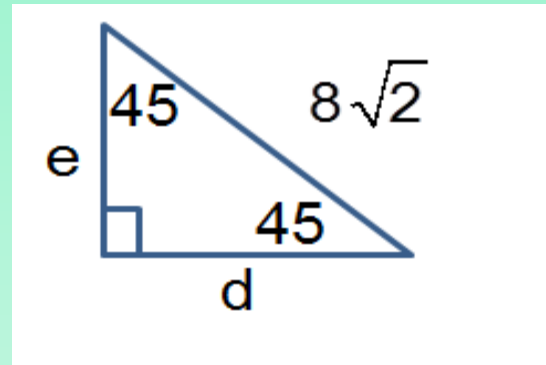
$$\boxed{2}$$



CALCULATOR OK FOR
PART a 😊 BUT NOT
FOR PART b ☹️

Station 5

6. find d and e in the special right triangle



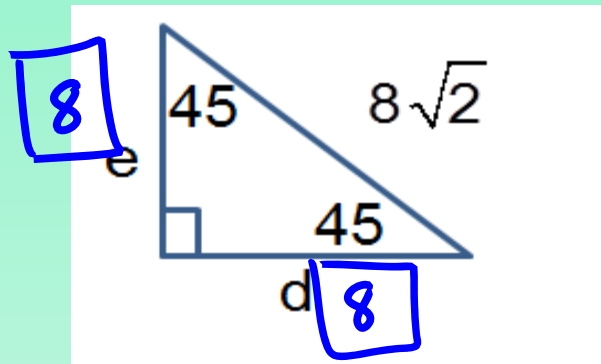
7. find the length of a side of a square with diagonal of length 8.

no calculator

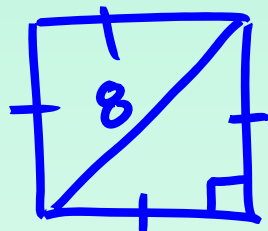


Station 5

6. find d and e in each triangle



7. find the length of the side of a square with diagonal of length 8.



$$s\sqrt{2} = 8$$

$$s = \frac{8}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$$

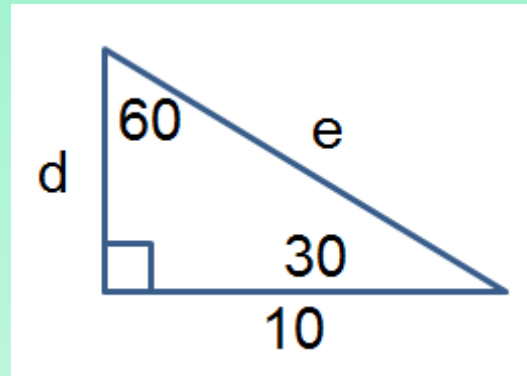
$$s = 4\sqrt{2}$$

no calculator



Station 6

8. find d and e in the triangle



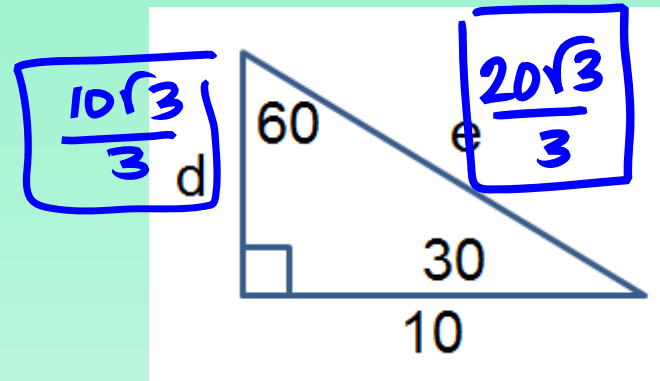
9. find the height of an equilateral triangle with a side length of $10\sqrt{6}$



no calculator

Station 6

8. find d and e in each triangle

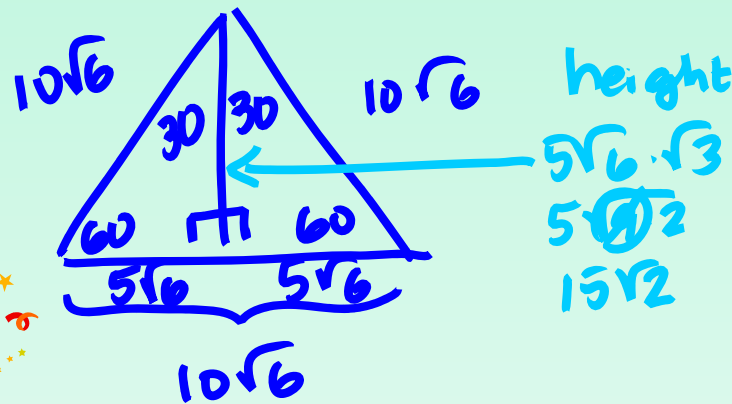


$$s\sqrt{3} = 10$$

$$s = \frac{10}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$$

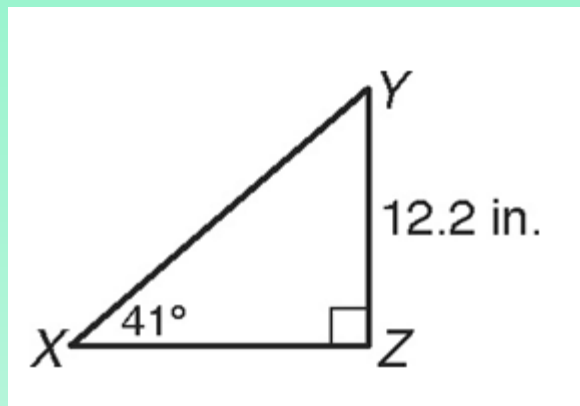
$$s = \frac{10\sqrt{3}}{3}$$

9. find the area of an equilateral triangle with a side length of $10\sqrt{6}$

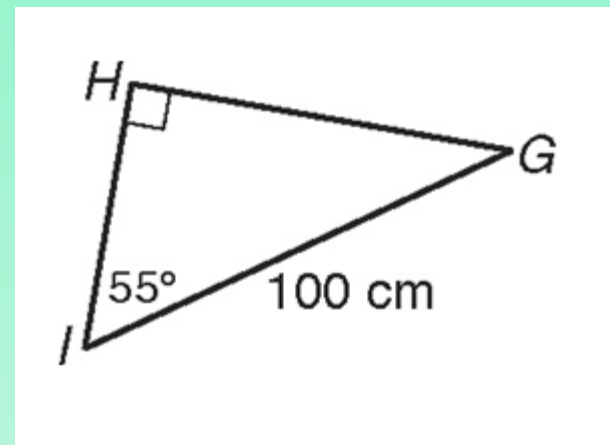


12.1
no calculator

11. find XZ



12. find hi

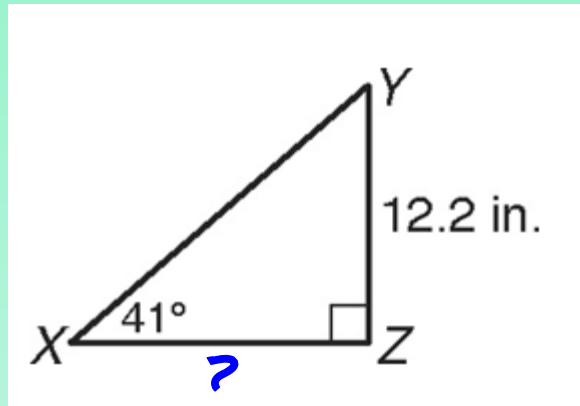


Station 7

calculator ☺



11. FIND XZ



$$\tan 41 = \frac{12.2}{XZ}$$

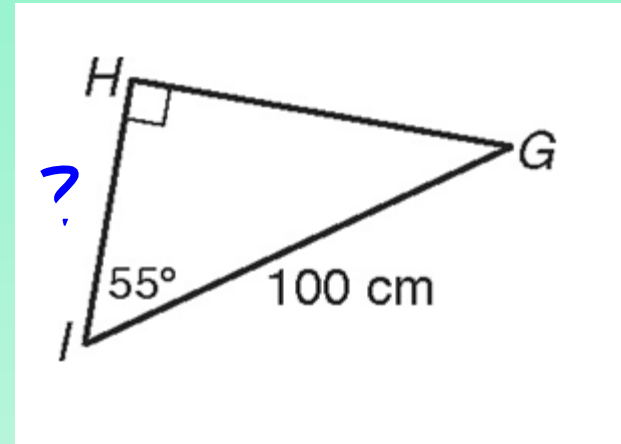
$$XZ \cdot \tan 41 = 12.2$$

$$XZ = \frac{12.2}{\tan 41}$$

$$XZ \approx 14.03$$

calculator ☺

12. FIND HI



$$\cos 55 = \frac{HI}{100} \text{ ☺}$$

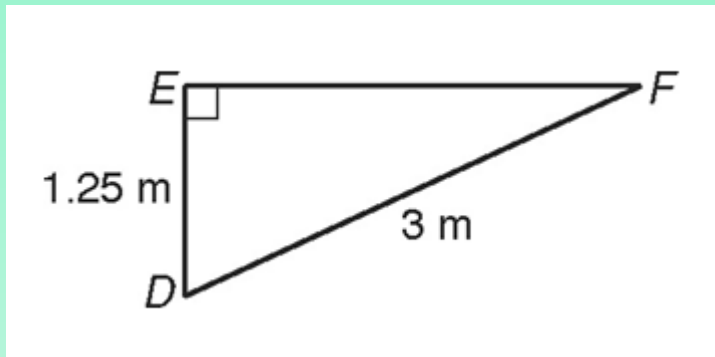
$$HI = 100 \cdot \cos 55$$

$$HI \approx 57.36$$

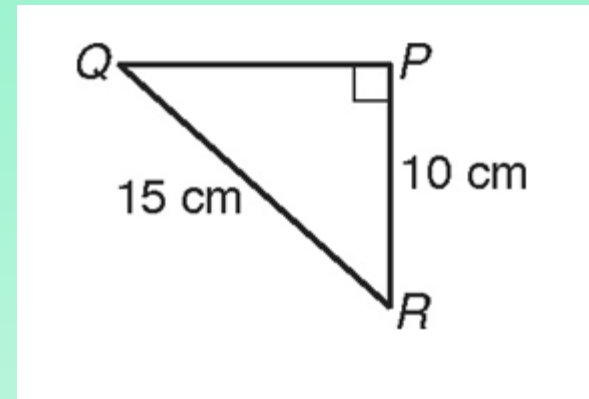
Station 7



13. find $m\angle D$



14. find $m\angle Q$

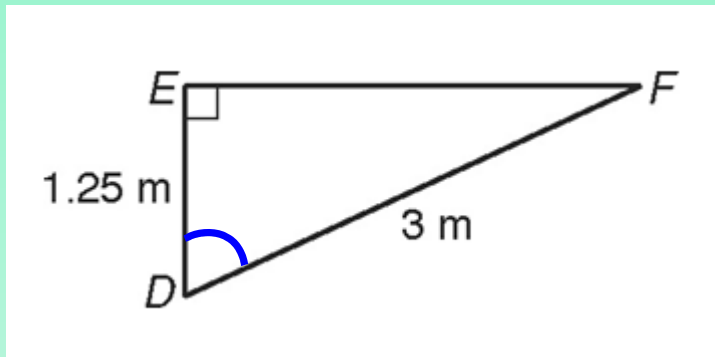


Station 8

calculator ☺



13. find $m\angle D$



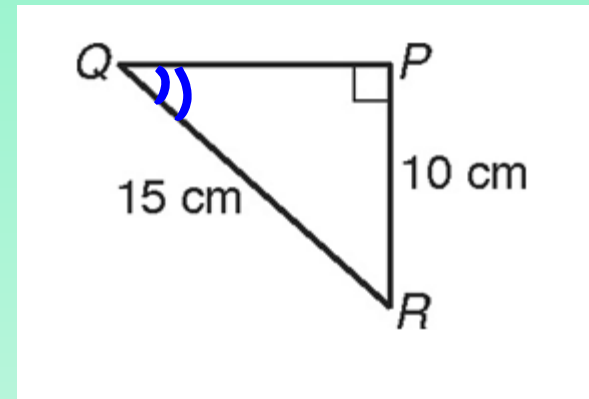
$$\cos D = \frac{1.25}{3}$$

$$D = \cos^{-1}\left(\frac{1.25}{3}\right)$$

$$\angle D \approx 65.38^\circ$$

calculator ☺

14. find $m\angle Q$



$$\sin Q = \frac{10}{15}$$

$$Q = \sin^{-1}\left(\frac{2}{3}\right)$$

$$\angle Q \approx 41.81^\circ$$

Station 8



15.

A person snorkeling sees a turtle on the ocean floor at an angle of depression of 38° . She is 14 feet above the ocean floor. How far from the turtle is she? Round to the nearest foot.

Station 9

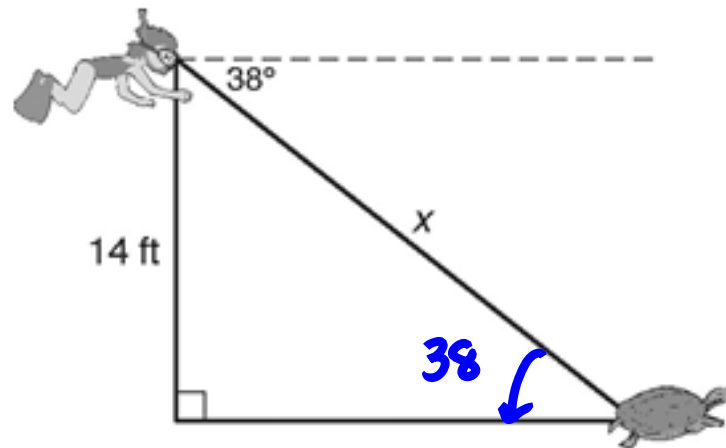
calculator ☺



15.

A person snorkeling sees a turtle on the ocean floor at an angle of depression of 38° . She is 14 feet above the ocean floor. How far from the turtle is she? Round to the nearest foot.

$$\sin 38 = \frac{14}{x}$$
$$x \cdot \sin 38 = 14$$
$$x = \frac{14}{\sin 38}$$
$$x \approx 23 \text{ feet}$$



About 23 ft away
from the turtle

12.5
calculator ☺



16.

The Skydeck at Willis Tower (formerly the Sears Tower) in Chicago is 1353 feet above street level. Simon looks east and notices a girl on a bicycle at an angle of depression of 56° . Two minutes later, he looks east again and sees the same bicycle at an angle of depression of 78°

- Is the bicycle moving towards or away from Simon?
- How far did the bicycle travel in those two minutes

Station 10



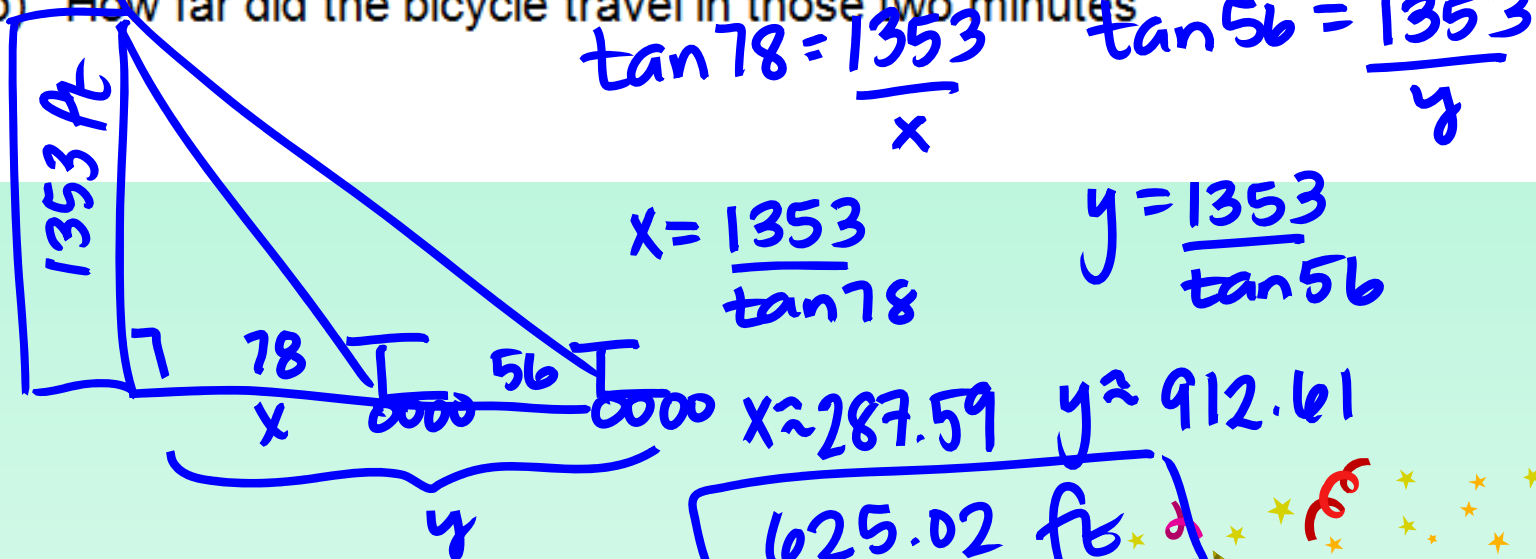
calculator ☺

16.

The Skydeck at Willis Tower (formerly the Sears Tower) in Chicago is 1353 feet above street level. Simon looks east and notices a girl on a bicycle at an angle of depression of 56° . Two minutes later, he looks east again and sees the same bicycle at an angle of depression of 78°

a) Is the bicycle moving towards or away from Simon? **TOWARDS!**

b) How far did the bicycle travel in those two minutes

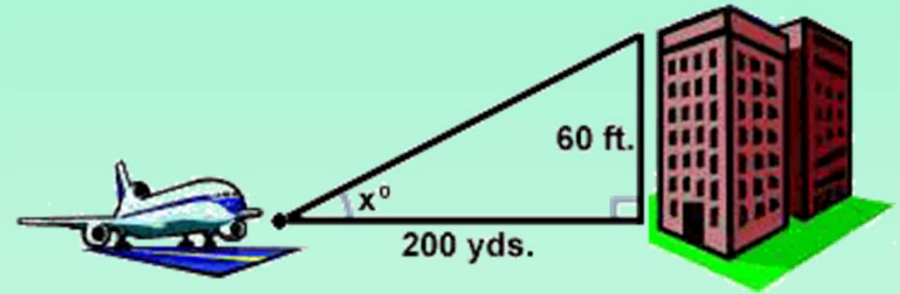


Station 10

calculator ☺



An airplane takes off 200 yards in front of a 60 foot building. At what angle of elevation must the plane take off in order to avoid crashing into the building? Assume that the airplane flies in a straight line and the angle of elevation remains constant until the airplane flies over the building



Station 11

calculator ☺

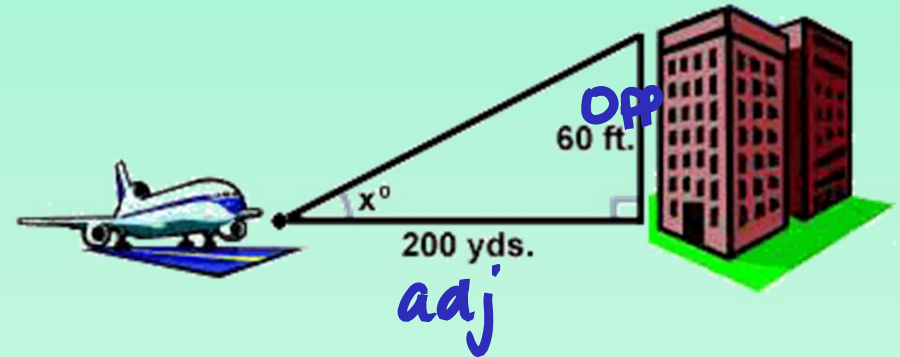


An airplane takes off 200 yards in front of a 60 foot building. At what angle of elevation must the plane take off in order to avoid crashing into the building? Assume that the airplane flies in a straight line and the angle of elevation remains constant until the airplane flies over the building

$$\tan x = \frac{60}{200}$$

$$\tan^{-1}\left(\frac{60}{200}\right) = x$$

$$x \approx 16.70^\circ$$



Station 11

calculator ☺

