Name ___Answers___

Use trigonometric ratios to solve for the variable in each figure below.

1.
h
15
38°
h

2.
h
8
26°
h

3.
h
23
49°
x
a

4.
37
41°
x
h
a

5.
y
15°
38
a

6.
y
55°
43
a

7.
15
z
38°
h

8.
z
52°
18
h

9.
w
38°
23
h
a

10.
w
38°
15
h
a

11.
38
15°
x
a

12.
29°
x
91
a

13.
5
x°
7
$\tan x = \frac{5}{7}$ **36°**
a

14.
u°
7
9
$\tan u = \frac{7}{9}$ **38°**
a

15.
12
y°
18
$\tan y = \frac{12}{18}$ **34°**
a
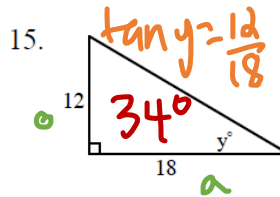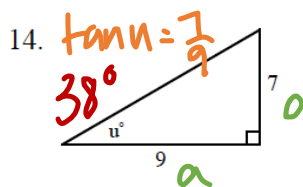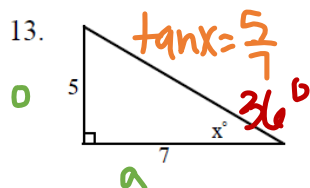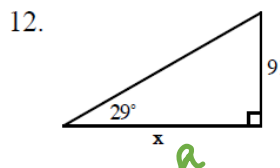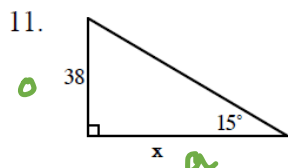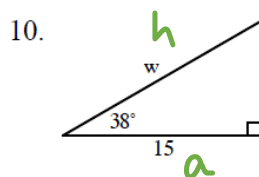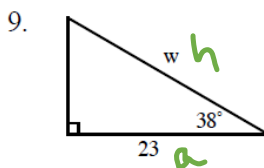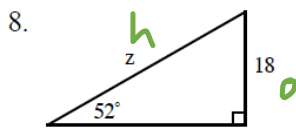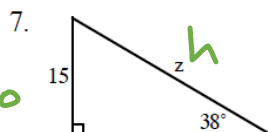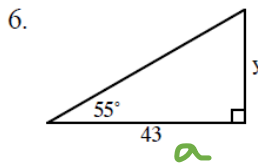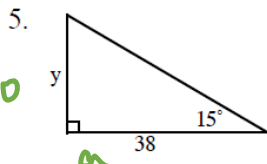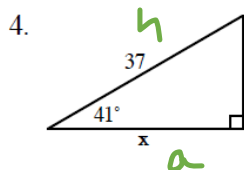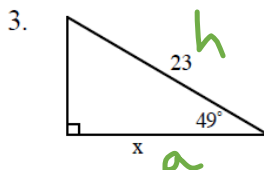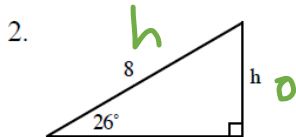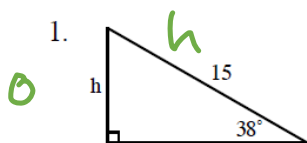
1) $\sin 38° = \frac{h}{15}$ h = 9.2

2) $\sin 26° = \frac{h}{8}$ h = 3.5

3) $\cos 49° = \frac{x}{23}$ x = 15.1

4) $\cos 41 = \frac{x}{37}$ x = 27.9

5) $\tan 15 = \frac{y}{38}$ y = 10.2

6) $\tan 55 = \frac{y}{43}$ y = 61.4

7) $\sin 38 = \frac{15}{z}$ z = 24.4

8) $\sin 52 = \frac{18}{z}$ z = 22.8

9) $\cos 38 = \frac{23}{w}$ w = 29.2

10) $\cos 38 = \frac{15}{w}$ w = 19.0

11) $\tan 15 = \frac{38}{x}$ x = 141.8

12) $\tan 29 = \frac{91}{a}$ a = 164.2

Draw a diagram and use trigonometric ratios to solve each of the following problems.

16. Juanito is flying a kite at the park and realizes that all 500 feet of string are out. Margie measures the angle of the string with the ground with her clinometer and finds it to be 42.5°. How high is Juanito's kite above the ground?

500 ft
42.5°
x
$\sin 42.5 = \frac{x}{500}$
x = 337.8
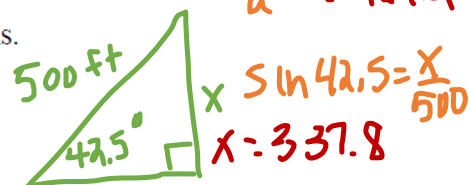
17 Nell's kite has a 350 foot string. When it is completely out, Ian measures the angle to be 47.5°. How far would Ian need to walk to be directly under the kite?

350 ft
47.5°
x
$\cos 47.5 = \frac{x}{350}$
x = 236.5
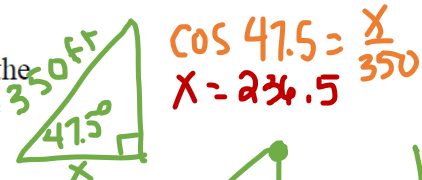
18. Mayfield High School's flagpole is 15 feet high. Using a clinometer, Tamara measured an angle of 11.3° to the top of the pole. Tamara is 62 inches tall. How far from the flagpole is Tamara standing? 15 ft = 180 in

11.3°
62 in
x
180 in
242 in
$\sin 11.3 = \frac{242}{x}$
x = 47.4
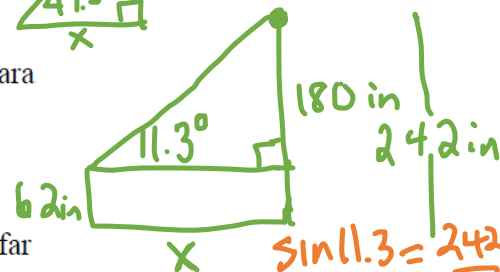
19. Tamara took another sighting of the top of the flagpole from a different position. This time the angle is 58.4°. If everything else is the same, how far from the flagpole is Tamara standing?

58.4°
242 in
x
$\tan 58.4 = \frac{242}{x}$
x = 393.4
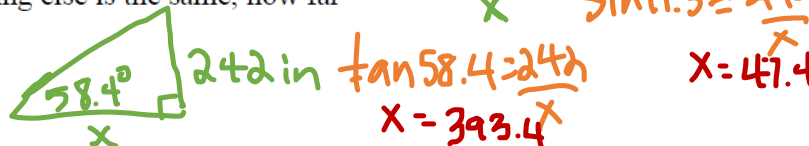
Change to radian or degrees:

20. 225° $\frac{\pi}{180} = \frac{5\pi}{4}$

21. $\frac{7\pi}{4} \cdot \frac{180}{\pi}$ **315°**

22. $\frac{19\pi}{9} \cdot \frac{180}{\pi}$ **380°**

23. $\frac{11\pi}{10} \cdot \frac{180}{\pi}$ **198°**

24. 390° $\frac{\pi}{180} = \frac{13\pi}{6}$

25. $\frac{8\pi}{3} \cdot \frac{180}{\pi} = 480°$