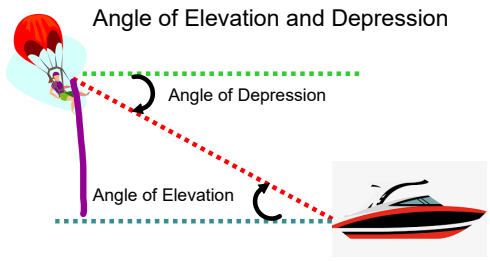
WARM UP - copy the diagram into your notes. Then draw a diagram, clearly labeled, for each problem.



1) Jamie is 5' 8" tall. Find the length of her shadow (to the nearest tenth) if the angle of elevation of the sun is 30.2°

2) A ship's sonar locates a treasure chest at a 12° angle of depression. A diver is lowered 40 meters to the ocean floor, directly below the ship. How far (to the nearest meter) does the diver need to swim along the ocean floor to get the treasure chest? Draw a picture use trigonometry to find the angle.

Jan 17-8:39 AM

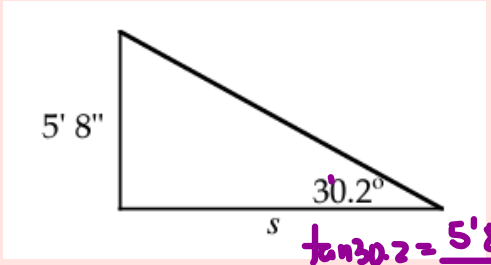
Angles of Elevation and Depression

Students will use basic trigonometry
to solve for missing information in right triangles.

Lesson objectives | Teachers' notes

Nov 4-10:28 AM

1) Jamie is 5' 8" tall. Find the length of her shadow (to the nearest tenth) if the angle of elevation of the sun is 30.2°



$5'8" = 5 \times 12 + 8 = 68$

$\tan 30.2 = \frac{5'8"}{x}$

$x(\tan 30.2 = \frac{68"}{x})x$

$\frac{x \tan 30.2}{\tan 30.2} = \frac{68}{\tan 30.2}$

$x = 68 / \tan 30.2$

$\tan 30.2 = \frac{5'8"}{x}$

$x = \frac{5'8"}{\tan 30.2}$

Pull

9.8'

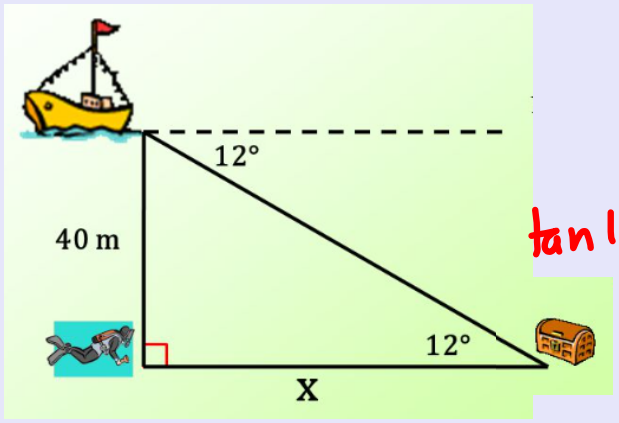
click to reveal

$x = 113.64 \text{ in}$

$113.64 \div 12$

Mar 20-7:19 PM

2) A ship's sonar locates a treasure chest at a 12° angle of depression. A diver is lowered 40 meters to the ocean floor, directly below the ship. How far (to the nearest meter) does the diver need to swim along the ocean floor to get the treasure chest? Draw a picture use trigonometry to find the angle.



$\tan 12 = \frac{40}{x}$

Pull

188 m

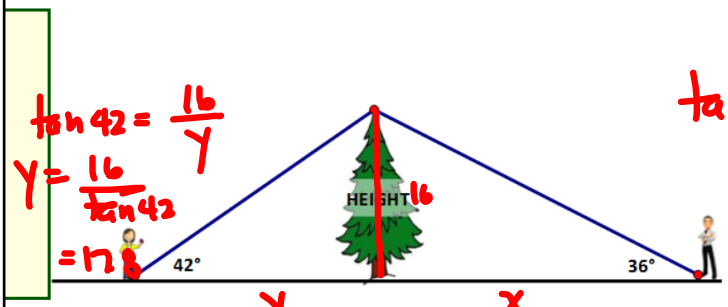
click to reveal

$x = \frac{40}{\tan 12}$

$x = 188.2 \text{ m}$

Mar 20-6:59 PM

3) Sally and Jonathan are on either side of 16 ft tree. Sally sees the top of the tree at 42° and Jonathan sees the top of the tree at 36°. How far apart are Sally and Jonathan (to the nearest foot)?



$\tan 42 = \frac{16}{y}$

$y = \frac{16}{\tan 42}$

$= 17.8$

$\tan 36 = \frac{16}{x}$

$x = \frac{16}{\tan 36}$

$= 22$ ft

y x

click to reveal

$d = y + x$

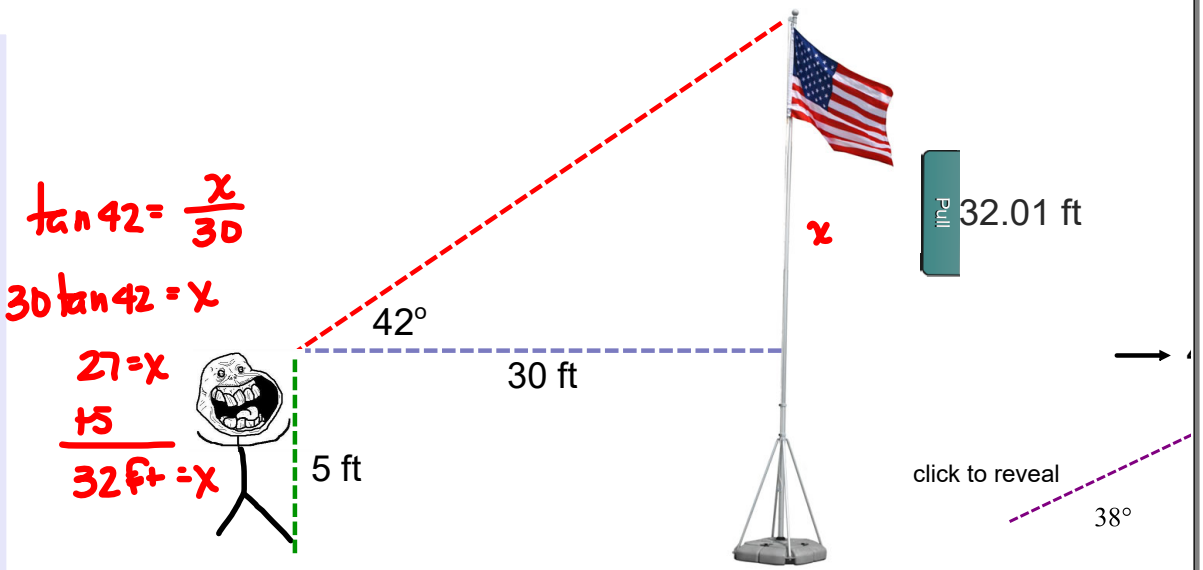
$d = 17.8 + 22$

$= 40$ ft

40 ft

Feb 24-3:18 PM

4) A person standing 30 ft from a flagpole can see the top of the pole at a 42° angle of elevation. The person's eye level is 5 ft from the ground. Find the height of the flagpole to the nearest foot.



$\tan 42 = \frac{x}{30}$

$30 \tan 42 = x$

$27 = x$

$+5$

32 ft $= x$

Mar 15-11:20 PM

In class practice to check your understanding.

Workbook p. 90-91
#1-13 all

Draw a diagram, write an equation, solve on your calculator.
Answers on next slide.

Oct 6-6:50 PM

Answers to WB pg 90-91

1.) x = 78.80 ft
2.) x = 19.7 km
3.) x = 184.3 ft
4.) x = 78.5
5.) pole = 127.2 ft
6.) x = 85.4 ft
7.) Object 2, <DAC
8.) x = 30 degrees
9.) The sides of the triangle form an isosceles triangle so the angle of elevation is 45
10.) 302.71 ft
11.) 47.64 ft
12.) height to tower: 96.5 ft
distance between cars 182.6 ft
13.) x = 44.7 m
14.) angle of elevation is 30
15.) pole = 45 ft

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