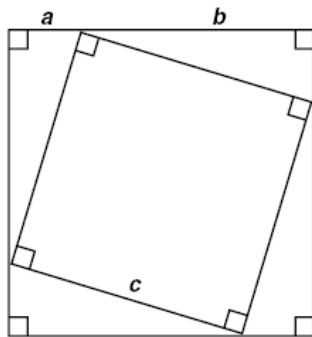


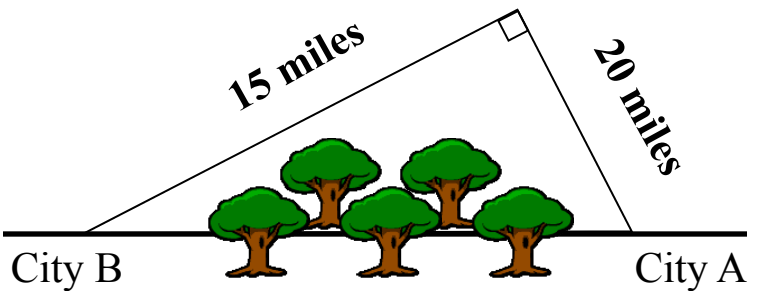
**1** Sketch a proof of the Pythagorean theorem using the following diagram.

G 14.0



**5** A new road was built through the Penta Forest to make a shorter drive from City A to

G 15.0 City B



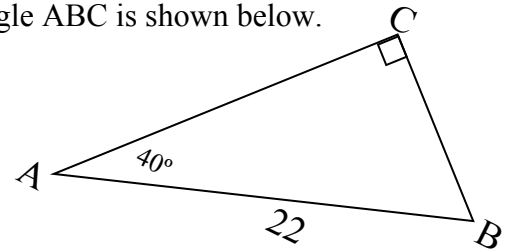
How many miles does the new route save?

**2** A right triangle's hypotenuse is 10. If one leg has the length of 4, then find the length of the third side.

G 15.0

**6** Triangle ABC is shown below.

G 19.0



Write an equation should be used to find AC and BC?

**3** A right triangle's hypotenuse is 8. If one leg has the length of 5, then find the length of the third side.

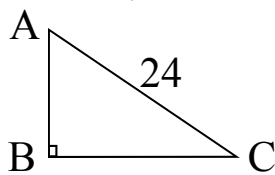
G 15.0

**7** Given that  $\sin x = \frac{77}{85}$  and  $\cos x = \frac{36}{85}$   
Find  $\tan x$

G 18.0

**4** In the figure below,  $\cos A = 0.9$

G 19.0

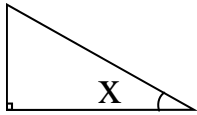


What is the length of  $\overline{AB}$  and  $\overline{BC}$

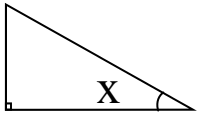
**8** Given that  $\sin x = \frac{39}{89}$  and  $\cos x = \frac{80}{89}$   
Find  $\tan x$

G 18.0

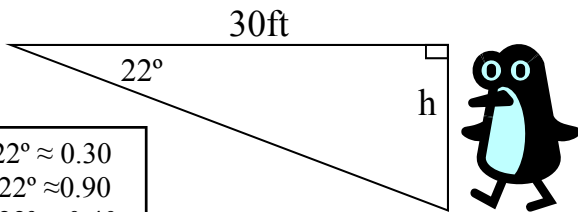
**9** In the figure below, if  $\sin x = \frac{7}{25}$ , then what is  $\cos x$  and  $\tan x$ .  
**G 19.0**



**10** In the figure below, if  $\cos x = \frac{6}{10}$ , then what is  $\sin x$  and  $\tan x$ .  
**G 19.0**



**11** You are in the stands at a Basketball playoff game and the opposing team's mascot is a huge penguin?? It is 45 feet away. You notice that the angle from the top of the penguin's head to the ground is  $22^\circ$ . Approximately how tall is the penguin?  
**G 19.0**

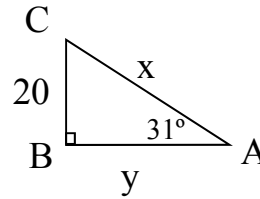


$\sin 22^\circ \approx 0.30$   
 $\cos 22^\circ \approx 0.90$   
 $\tan 22^\circ \approx 0.40$

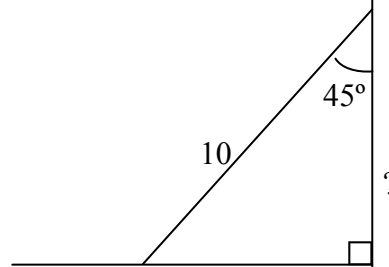
**12** Given that  $\sin x = \frac{2}{15}$   
**G 18.0** Find  $\cos x$  using a Trig Identity.

**13** Given that  $\cos x = \frac{\sqrt{73}}{10}$   
**G 18.0** Find  $\sin x$  using a Trig Identity.

**14** In the accompanying diagram,  $m\angle A = 31^\circ$  and  $BC = 20$ . Write an equation to find  $x$  and  $y$  in  $\triangle ABC$ .  
**G 19.0**

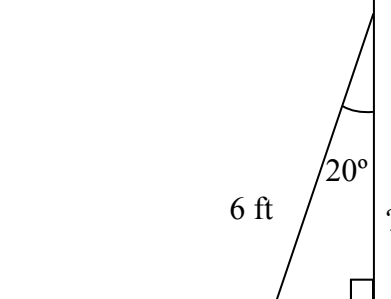


**15** The diagram shows an 10ft ladder rests against a wall. The ladder makes an angle of  $45^\circ$  with the wall. Approximately what is the height from the ground to the top of the ladder.  
**G 19.0**



$\sin 45^\circ \approx 0.70$   
 $\cos 45^\circ \approx 0.70$   
 $\tan 45^\circ \approx 1.0$

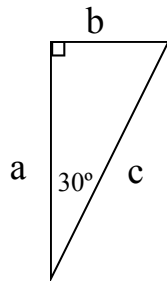
**16** The diagram shows an 6ft ladder rests against a wall. The ladder makes an angle of  $20^\circ$  with the wall. Approximately what is the height from the ground to the top of the ladder.  
**G 19.0**



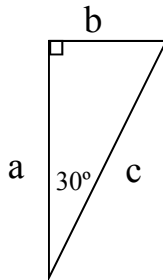
$\sin 20^\circ \approx 0.34$   
 $\cos 20^\circ \approx 0.94$   
 $\tan 20^\circ \approx 0.36$

**17** If the side lengths of a triangle are 8, 9, and 15, then what type of triangle is it?  
**G 15.0**

**18** If  $a = 9\sqrt{3}$  in the right triangle below, what is value of b and c?  
**G 20.0**

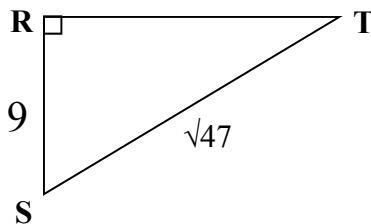


**19** If  $a = 6$  in the right triangle below, what is value of b?  
**G 20.0**



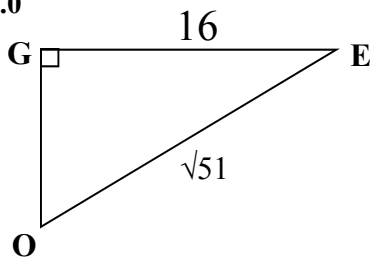
**20** Find Sin S and Sin T

**G 19.0**



**21** Find Sin O and Sin E.

**G 19.0**

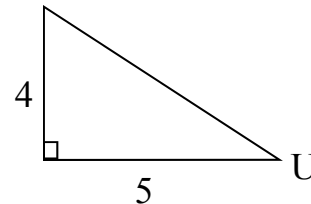


**22** Given two numbers 5 and 20, which is greater the geometric mean or the arithmetic mean?  
**G 1.0**

**23** Given two numbers 7 and 28, which is greater the geometric mean or the arithmetic mean?  
**G 1.0**

**24** Given the figure and table below, find the approximate  $m\angle U$ .

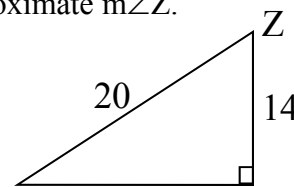
**G 19.0**



$\cos 45^\circ = 0.7$
$\sin 45^\circ = 0.7$
$\tan 39^\circ = 0.8$
$\cos 26^\circ = 0.9$
$\sin 64^\circ = 0.9$
$\tan 42^\circ = 0.9$

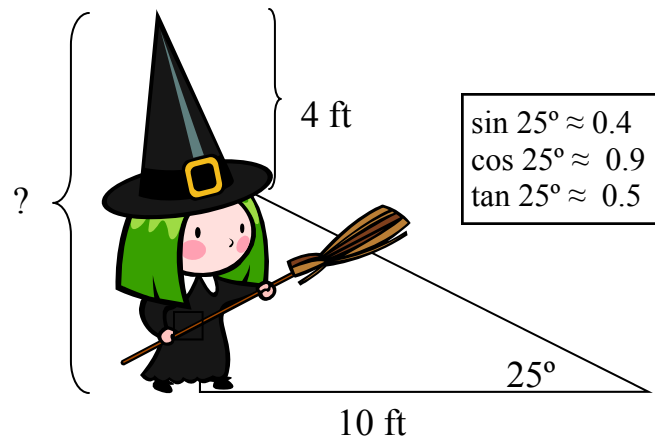
**25** Given the figure and table below, find the approximate  $m\angle Z$ .

**G 19.0**



$\cos 45^\circ = 0.7$
$\sin 45^\circ = 0.7$
$\tan 39^\circ = 0.8$
$\cos 26^\circ = 0.9$
$\sin 64^\circ = 0.9$
$\tan 42^\circ = 0.9$

**26** If the angle from the ground to the top of the witch's hat is  $35^\circ$  from 20 ft away. If the hat is 4ft tall, then what is her total hat including the hat?  
**G 19.0**



$\sin 25^\circ \approx 0.4$
$\cos 25^\circ \approx 0.9$
$\tan 25^\circ \approx 0.5$

**27** If the side lengths of a triangle are 5, 6, and 10, then what type of triangle is it?  
**G 15.0**

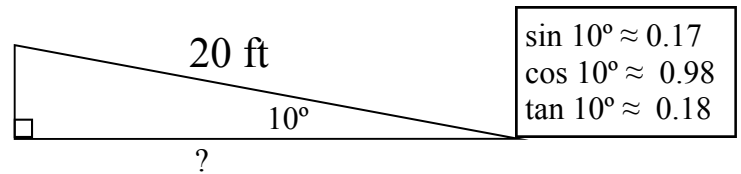
**28** Write 8 Pythagorean triples  
**G 15.0**

**29** An equilateral triangle has side lengths of  $12\sqrt{3}$ . Find the length of the altitude.  
**G 20.0**

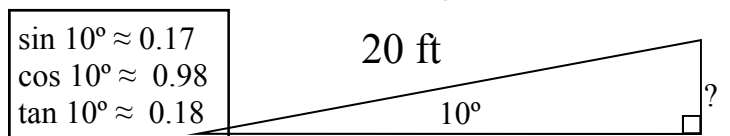
**30** An equilateral triangle has an altitude of  $12\sqrt{3}$ . Find the length of the sides.  
**G 20.0**

**31** A square has a diagonal of 16. Find the length of the sides.  
**G 20.0**

**32** A wheelchair ramp is 20 feet long and is angled at  $10^\circ$ . Find the approximate distance across the ground.  
**G 19.0**



**33** A wheelchair ramp is 20 feet long and is angled at  $10^\circ$ . Find the approximate distance above the ground.  
**G 19.0**



**34** A teeball league baseball “diamond” is a square with a side length of 20 feet. How far is the throw from third Base to first base?  
**G 20.0**

**35** A square has a side length of 16. Find the length of the diagonal  
**G 20.0**