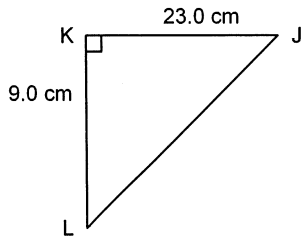


Trigonometry - Unit Review FPC 10

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- ____ 1. Solve this right triangle. Give the measures to the nearest tenth.

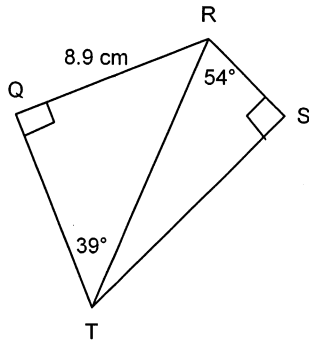


- a. $\angle J = 68.6^\circ$; $\angle L = 21.4^\circ$; $JL = 24.7$ cm c. $\angle J = 21.4^\circ$; $\angle L = 68.6^\circ$; $JL = 24.7$ cm
b. $\angle J = 68.6^\circ$; $\angle L = 21.4^\circ$; $JL = 63.1$ cm d. $\angle J = 21.4^\circ$; $\angle L = 68.6^\circ$; $JL = 63.1$ cm

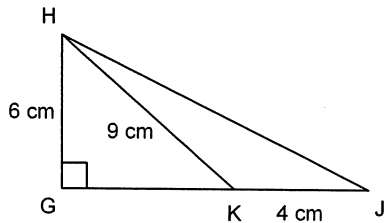
Do all your work on a separate sheet of paper.

- A helicopter is ascending vertically. On the ground, a searchlight is 125 m from the point where the helicopter lifted off the ground. It shines on the helicopter and the angle the beam makes with the ground is 48° . How high is the helicopter at this point, to the nearest metre?
- A ladder leans against a wall. The base of the ladder is on level ground 1.2 m from the wall. The angle between the ladder and the ground is 70° . How far up the wall does the ladder reach, to the nearest tenth of a metre?
- A flagpole casts a shadow that is 21 m long when the angle between the sun's rays and the ground is 48° . Determine the height of the flagpole, to the nearest metre.
- An airplane is flying at an altitude of 7000 m. At a certain time, the angle between the ground and a person's line of sight to the airplane is 22° . About how far away is the person from a point on the ground vertically below the airplane, to the nearest hundred metres?
- A balloon is flying at the end of a 170-m length of string, which is anchored to the ground. The angle of inclination of the string is 50° . Calculate the height of the balloon to the nearest metre.
- A submarine ascends to the surface from the ocean floor (assume the submarine is on level ground). The distance measured along the submarine's path is 600 m. The angle of inclination of the submarine's path is 21° . Determine the horizontal distance that the submarine travelled to the nearest metre.
- A water taxi leaves its dock, and travels 7 km due north to pick up medical supplies. It then travels 15 km due east to drop off the supplies at a hospital. To the nearest degree, what is the measure of the angle between the path it took due east and the path it will take to return directly to its dock?

9. Determine the length of RS to the nearest tenth of a centimetre.



10. Calculate the measure of $\angle GHJ$ to the nearest tenth of a degree.



11. From the top of a 25-m lookout tower, a fire ranger observes one fire due east of the tower at an angle of depression of 7° . She sees another fire due north of the tower at an angle of depression of 3° . How far apart are the fires to the nearest metre?
12. Two trees are 96 m apart. From a point halfway between the trees, the angles of elevation of the tops of the trees are 10° and 19° . To the nearest tenth of a metre, how much taller is one tree than the other?
13. A tree is supported by a guy wire. The guy wire is anchored to the ground 7.0 m from the base of the tree. The angle between the wire and the level ground is 60° . How far up the tree does the wire reach, to the nearest tenth of a metre?
14. A coast guard patrol boat is due west of the Carmanah lighthouse. An overturned fishing boat is due north of the lighthouse. The patrol boat travels 8.6 km directly to the fishing boat. The angle between due east and the patrol boat's path is 48° . To the nearest tenth of a kilometre, determine the distance between the fishing boat and the lighthouse.

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Answer Section

MULTIPLE CHOICE

1. C

SHORT ANSWER

2. 139 m
3. 3.3 m
4. 23 m
5. 17 300 m
6. 130 m
7. 560 m
8. 25°
9. 8.3 cm
10. 60.7°
11. 519 m
12. 8.1 m
13. 12.1 m

PROBLEM

14.

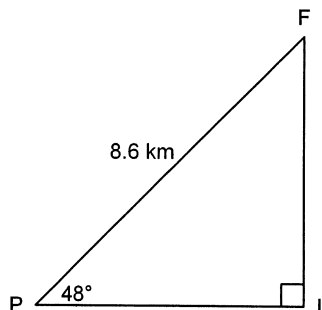
Label a diagram to represent the problem.

In right $\triangle FLP$, FP is the hypotenuse and FL is opposite $\angle P$. So, use the sine ratio to determine the length of FL .

$$\sin P = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\sin P = \frac{FL}{FP}$$

$$\sin 48^\circ = \frac{FL}{8.6}$$



Solve this equation for FL .

$$8.6 \sin 48^\circ = \frac{(8.6)(FL)}{8.6}$$

$$8.6 \sin 48^\circ = FL$$

$$FL = 6.3910\dots$$

The distance between the fishing boat and the lighthouse is approximately 6.4 km.