Name:

Find the length of the indicated side to the nearest tenth

DAY 1 - Pythagorean Theorem

1.

Find the length of the hypotenuse to the nearest tenth of a unit.



2.



3.

Jie-ling walks home from school by walking around two sides of a rectangular park. The length of the park is 125 m and the width is 121 m. If Jie-ling were to walk diagonally across the park, how far would she walk?

4.

Brook is flying a kite while standing 24 m from the base of a tree at the park. Her kite is directly above the 3-m tree and the 25-m string is fully extended. Approximately how far above the tree is her kite flying?

5.

Natalya is playing baseball. She catches a ground ball at third base. The player on the opposing team is running toward first base. How far does Natalya have to throw the ball to throw the runner out?



6.

Daniel is building a wooden bridge for his daughter's model railroad. He sketches a plan for the bridge. What length of wood does Daniel need to build the bridge?



7.

Darlene goes camping with her children. As they set up the tent, they discover that the vertical support poles are missing. What length of pole does Darlene need to buy?



Name:

IF there's time

Investigation:

Complete the table below using the triangles provided. Round answers to one decimal place.





Triangle	opposite hypotenuse	sin A	adjacent hypotenuse	cos A	opposite adjacent	tan A
∆авс						
ΔχγΖ						

1. What do you notice about the ratios of lengths of sides and the trigonometric ratios in both triangles?

2. Ways to label triangle angles and sides. Small case vs capitals, inside triangle vs outside, where angles and sides go in equations, how to round

DAY 2 - Primary Trig Ratios – SOH CAH TOA – solving for sides

1. Practice labelling tiangles using side names: opposite, adjacent, hypotenuse.



MAKE SURE your calculator is in DEGREE mode!

2. Use a scientific calculator to find each value to four decimal places.

a)	sin 65°	D)	sin 48°
C)	cos 35°	d)	cos 58°
e)	tan75°	f)	tan39°









4.

Hannah wants to make a lean-to shelter against a tree. She starts with a plank that is 2.1 m long. If she wants to have a 45° angle between the ground and the lower end of the plank, how far away from the base of the tree should the lower end of the lean-to be?



5.

Jeff will use right triangles in his design for the elevator to take resort guests down the cliff. He plans to have an angle of 45°, and a diagonal length of 1.2 m. How long will the vertical piece for this part of the elevator be?



6.

The Cathedral Bluffs in Toronto, Ontario, are eroded sandstone cliffs that rise 90 m above Lake Ontario. Natalie is 1.4 m tall. From her position at the top of the cliffs, the angle between the surface of the lake and her line of sight to a boat is 39°. Find the distance between the boat and the base of the cliffs to the nearest tenth of a metre.



7.

The hypotenuse of a right triangle is 17.9 cm long.

- a) How long is the side opposite an angle that measures 27°, to the nearest tenth of a centimetre?
- **b)** What is the measure of the third angle in this triangle?

DAY 3 - More Practice SOH CAH TOA

1.

Label the hypotenuse, the opposite side, and the adjacent side relative to the marked angle.



MAKE SURE your calculator is in DEGREE mode!

2. Use a scientific calculator to find the measure of each ∠ to the nearest degree.

a)	sin A = 0.8192	b)	sin A = 0.9962
c)	tan B = 0.9063	d)	cos B = -0.8480
e)	cos B = 0.1233	f)	tan B = 0.6680







5.

Find the height of the tower to the nearest tenth of a metre.



6.

• Write the ratio comparing the length of the adjacent side to the length of the hypotenuse for the marked angle. Then, express the ratio as a decimal, rounded to three decimal places. Compare answers with a classmate.

Then find angle H



Name: ___

DAY 4 - Similar Triangles

1. Write a proportionality statement for each pair of similar triangles



2. For each pair of similar triangles find the missing measures a) $\triangle DEF \sim \triangle X Y Z$





For each pair of similar triangles find the measure asked
a) Find the length of side DE.





4.

Given that DE is parallel to AC, AD = 6.8, DB = 9.3, and BC = 12.8, find the length of BE to the nearest tenth of a unit.



5.

A person 1.9 m tall casts a shadow 3.8 m long. At the same time a tree casts a shadow 18 m long. Find the height of the tree.

6.

In \triangle VWX, WX = 28 cm, VX = 35 cm, and VW = 14 cm. In \triangle PQR, QR = 20 cm, PR = 25 cm, and PQ = 10 cm. Are triangles VWX and PQR similar? How do you know?

7.

Given $\triangle DEF \sim \triangle RPQ$, EF = 10 in., DF = 9 in., DE = 8 in., and RQ = 0.5 ft. Find the length of side PQ.

DAY 5 – More Similar Triangles



Are the triangles similar? If so, write a similarity statement and the ratio proportion statement





Find the scale factor.

Find the value of x.

Find the value of y.

DABE ~ DADC





8. Find the unknown sides







9. The tips of the shadows of a flagpole and a 1.5-m fence post meet at the point S. The following lengths are measured: ST = 2.7 m and QT = 7.4 m. Use this information to find the height of the flagpole. Round your answer to the nearest tenth of a metre.



10.

In the diagram, DE is parallel to AC. BD = 4, DA = 6, and BE = 5. Find the length of BC to the nearest tenth of a unit.



DAY 6 - Solve Word Problems

1.

A wheelchair ramp is 2.5 m. The horizontal distance from the end of the ramp to the building is 2 m. What angle does the ramp make with the ground?



3.

Ralph is on the roof of a building, while his friend Ajay is on the ground. Ralph can see Ajay at a 50° angle of depression. The vertical height of the building is 20 m. What is the diagonal distance from Ralph to where Ajay is standing?

2.

Sheryl's tree house is 3 m above the ground. Sheryl looks down at an angle of depression of 30° and can see her poodle's doghouse. What is the horizontal distance from the doghouse to the tree house?

4.

From a point 6.5 m from the base of the school flagpole, the angle of elevation to the top of the flagpole is 46° . What is the height of the flagpole?

5.



From a point 4.5 m from the base of a wind turbine, the angle of elevation to the top of the turbine is 87°. Find the height of the wind turbine to the nearest tenth of a metre.

6.

A flagpole 3 meters tall casts a shadow 5 meters long at the same time that a building nearby casts a shadow 62 meters long. How tall is the building?

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The angle of depression from the top of a castle to a boat is

25°. If the distance from the top of the castle to the boat is

determined to be 100 m, how high is the castle?

8.

10.

From a point 9.3 m from the base of a billboard, the angle of elevation to the top of the billboard is 28°. Find the height of the billboard to the nearest tenth of a metre.

A 4-m long ladder is leaning up against the side of a garage.

the ladder makes with the ground, to the nearest degree.

It reaches 3.8 m up the side of the garage wall. Find the angle

Name:

9.

7.

A forest ranger is in a fire tower 120 ft above the ground. She sights a fire at an angle of depression of 3°. How far is the fire from the base of the tower, to the nearest foot?

11.

Marlene is making a pen in her backyard for her daughter's pet rabbits. She makes the pen in the shape of a right triangle. Two sides of the pen each measure 3 m. What is the length of the third side?

12.

Ron is building a skateboard ramp for his granddaughter Alexis. Ron wants the ramp to rise at an angle of 12°. If he also wants the ramp to rise vertically 0.5 m how long will the ramp need to be?



Practice TEST

- 1. tan 47° is
- 2. cos 55° is
- **3.** sin 49° is
- **4.** If sin A = 0.8829, then $\angle A$ is approximately

8. Thi's model boat has a base 60 cm long. The horizontal length of the sail is half the length of the base of the boat. ∠C is 45°. What is the diagonal side of the sail?

45° С B 60 cm

- **5.** If $\cos A = 0.8290$, then $\angle A$ is approximately
- 6. A slide in a park has a vertical height of 1.5 m. The horizontal distance covered by the slide is 2 m. The length of the slide is



9. From a point 9.8 m from the base of a flagpole, the angle of elevation to the top of the pole is 48°. What is the height of the flagpole?

- **7.** A cat lying on the ground is 1.5 m away from his owner. The angle of elevation from the cat to his owner's head is 48°. How tall is his owner?
- **10.** Jan's tree house is 4.8 m above the ground. When he looks down at an angle of depression of 40°, he can see over the fence and into his neighbour's backyard. What is the diagonal distance from tree house to the neighbour's backyard?

11. In \triangle JKL below, JK is 4 cm, JL is 16 cm, and KL is 16.49 cm.



12. In \triangle GHI below, GI is 3.5 m and GH is 3m. Determine the angle \angle G to the nearest degree.



14. Beatriz lives on Arc Avenue, which is 200 m long. Her aunt's house is on Tumble Street, which is 150 m long.



- a) Determine the distance that Beatriz travels if she goes along both streets from her house to her aunt's house.
- **b)** What is the distance that Beatriz travels if she takes a diagonal shortcut?

c) How much shorter is the shortcut?

13. Line segments AC and DE are parallel. Find the length of AC to the nearest tenth of a unit.



15. The height of Melvin's house is 12 m. His friend, Matt, lives in a house that is 15 m tall. If Matt's house casts a shadow that is 16 m long, what is the length of the shadow cast by Melvin's house to the nearest tenth of a metre?