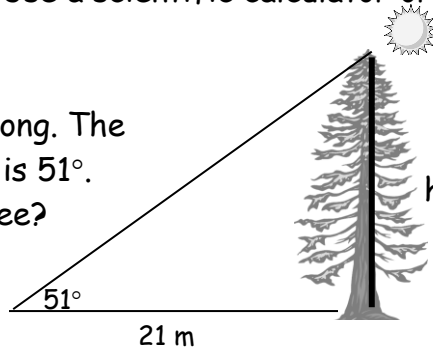


### Applications of Trigonometry Wkst III

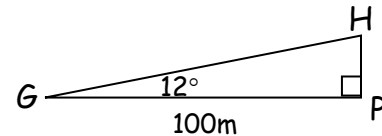
In exercises 1-5, express lengths correct to the nearest meter and angles correct to the nearest degree. Use a scientific calculator or the table of trig values.

1. A tree casts a shadow 21 m long. The angle of elevation of the sun is  $51^\circ$ . What is the height of the tree?



1. \_\_\_\_\_

2. A helicopter (H) is hovering over a landing pad (P) 100 m from where you are standing (G). The helicopter's angle of elevation with the ground is  $12^\circ$ . What is the altitude of the helicopter?



2. \_\_\_\_\_

3. You are flying a kite and have let out 80 m of string. The kite's angle of elevation with the ground is  $40^\circ$ . If the string is stretched straight, how high is the kite above the ground?

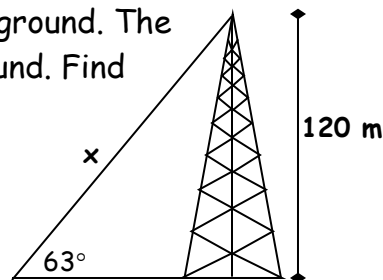
3. \_\_\_\_\_

4. A 15 m pole is leaning against a wall. The foot of the pole is 10 m from the wall. Find the angle the pole makes with the ground.

4. \_\_\_\_\_

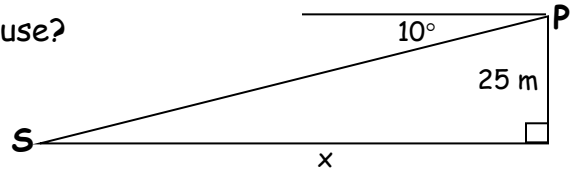
5. A guy wire reaches from the top of a 120 m television transmitter tower to the ground. The wire makes a  $63^\circ$  angle with the ground. Find the length of the guy wire.

5. \_\_\_\_\_



6. An airplane climbs at an angle of  $18^\circ$  with the ground. Find the ground distance the plane travels as it moves 2500 m through the air. Give your answer to the nearest 100 m. 6. \_\_\_\_\_

7. A lighthouse operator at point P 25 m above sea level sights a sailboat at point S. The angle of depression of the sighting is  $10^\circ$ . How far is the boat from the base of the lighthouse? Give your answer to the nearest 10 m. 7. \_\_\_\_\_



8. A person on a building 200 m high looks at a flower bed below. The angle of depression is  $12^\circ$ . How far is the flower bed from the foot of the building? 8. \_\_\_\_\_

9. A ramp is 150 ft long and rises vertically 25 ft. Find the angle of elevation of the ramp. 9. \_\_\_\_\_

10. From a treehouse, the angle of depression to the house measures  $53^\circ$ . The tree is 12 m from the base of the house. How far is the tree house from the base of the house? 10. \_\_\_\_\_

11. A building casts a shadow 345 ft long when the angle of elevation to the sun is  $48^\circ$ . Find the height of the building. 11. \_\_\_\_\_

12. A person looked up at a bird flying overhead. The bird was directly over a tree 100 ft away. The angle of depression was  $42^\circ$ . How high was the bird flying? 12. \_\_\_\_\_