

Trigonometry

Name: \_\_\_\_\_

Study Guide 8

Class: \_\_\_\_\_

Due Date: \_\_\_\_\_

Score: \_\_\_\_\_

No Work  $\Leftrightarrow$  No Points

Use Pencil Only  $\Leftrightarrow$  Be Neat & Organized

- 
1. (2 points) Find the area of the triangle  $ABC$  with  $a = 12$  cm,  $b = 8$  cm, and  $\angle C = 40^\circ$ .

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

2. (4 points) Find the remaining parts of the triangle  $ABC$  with  $\angle A = 130^\circ$ ,  $\angle B = 20^\circ$ , and  $b = 6$  ft.

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

3. (2 points) Find the area of the triangle  $ABC$  with  $a = 8$  ft,  $b = 10$  ft, and  $\angle C = 140^\circ$ .

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

4. (2 points) Find the area of the triangle  $ABC$  with  $a = 7$  ft,  $b = 10$  ft, and  $c = 15$  by using the Heron's formula

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

5. (4 points) Find the remaining parts of the triangle  $ABC$  with  $\angle C = 65^\circ$ ,  $a = 5$ , and  $b = 8$  ft.

---

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

6. (4 points) Find the remaining parts of the triangle  $ABC$  with  $\angle B = 48^\circ$ ,  $a = 7$ , and  $c = 6$  ft.

---

6. \_\_\_\_\_

7. (5 points) From a point at ground level, the angle of elevation to the top of the mountain was  $28^\circ$ , and if you get one kilometer closer to the mountain, the angle of elevation becomes  $45^\circ$ . Use this information to find the height of the mountain. Detailed drawing required.

---

7. \_\_\_\_\_

8. (5 points) Observers in two towns on either side of a mountain have angle of elevation  $28^\circ$  and  $46^\circ$ . Find the horizontal distance between the cities if the height of the mountain is 12,000 ft. Detailed drawing required.

---

8. \_\_\_\_\_

9. (5 points) Two points A and B lie on opposite sides of a river. Another point C is located on the same side of the river as B at a distance of 230 ft from B. If the angle  $ABC$  is  $105^\circ$  and the angle  $ACB$  is  $20^\circ$ . Find the distance across the river. Detailed drawing required.

---

9. \_\_\_\_\_

10. Basic computations:

- (a) (2 points) Convert to degrees:  $\frac{5\pi}{12}$

(a) \_\_\_\_\_

- (b) (2 points) Convert to radians using  $\pi$  notation:  $165^\circ$

(b) \_\_\_\_\_

11. For a circle with radius  $r$ , a central angle  $\theta$  radians subtends an arc of length  $s = r\theta$ , use this formula to find the arc length for

(a) (2 points)  $r = 5$  in,  $\theta = 3$  radians

(a) \_\_\_\_\_

(b) (2 points)  $r = 12$  ft,  $\theta = 15^\circ$

(b) \_\_\_\_\_

---

12. For a circle with radius  $r$ , the area  $A$  of a circular sector with central angle  $\theta$  radians is given by  $A = \frac{1}{2}r^2\theta$ , use this formula to find

(a) (2 points) the area of a circular sector with  $r = 6$  in and  $\theta = \frac{2\pi}{3}$  radians.

(a) \_\_\_\_\_

(b) (2 points) the area of a circular sector with  $r = 6$  ft and  $\theta = 120^\circ$ .

(b) \_\_\_\_\_

---

13. (5 points) From a radar station, town A is at the bearing of  $N47^\circ W$ , and the distance is 48 miles. From the same radar station, town B is at the bearing of  $S20^\circ W$ , and the distance is 40 miles. Find the horizontal distance between the cities. Detailed drawing required.

13. \_\_\_\_\_