G.SRT.D.9: Using Trigonometry to Find Area 5

1 An obtuse angle of a parallelogram has a measure of 150º. If the sides of the parallelogram measure 10 and 12 centimeters, what is the area of the parallelogram?
1) 30 cm^2
2) 60 cm^2
3) $60\sqrt{2} \text{ cm}^2$
4) $60\sqrt{3} \text{ cm}^2$

2 The sides of a parallelogram are 6 and 8, and the included angle is 150º. What is the area of the parallelogram?
1) 24
2) 48
3) $24\sqrt{3}$
4) $48\sqrt{2}$

3 What is the area of a parallelogram if two adjacent sides measure 4 and 5 and an included angle measures 60º?
1) $5\sqrt{2}$
2) $10\sqrt{2}$
3) $5\sqrt{3}$
4) $10\sqrt{3}$

4 What is the area of parallelogram $ABCD$ if $AB = 4$, $AD = 5\sqrt{3}$, and m$\angle A = 60$?
1) 15
2) 30
3) $5\sqrt{3}$
4) $10\sqrt{3}$

5 What is the area of a parallelogram that has sides measuring 8 cm and 12 cm and includes an angle of 120°?
1) $24\sqrt{3}$
2) $48\sqrt{3}$
3) $83\sqrt{3}$
4) $96\sqrt{3}$

6 The sides of a parallelogram measure 10 cm and 18 cm. One angle of the parallelogram measures 46 degrees. What is the area of the parallelogram, to the *nearest square centimeter*?
1) 65
2) 125
3) 129
4) 162

7 In the accompanying diagram of parallelogram $ABCD$, m$\angle A = 30$, $AB = 10$, and $AD = 6$. What is the area of parallelogram $ABCD$?

8 Two sides of a parallelogram are 24 feet and 30 feet. The measure of the angle between these sides is 57°. Find the area of the parallelogram, to the *nearest square foot*.

9 The two sides and included angle of a parallelogram are 18, 22, and 60°. Find its exact area in simplest form.

10 Find, to the *nearest tenth of a square foot*, the area of a rhombus that has a side of 6 feet and an angle of 50°.

11 The area of a parallelogram is 594, and the lengths of its sides are 32 and 46. Determine, to the *nearest tenth of a degree*, the measure of the acute angle of the parallelogram.

G.SRT.D.9: Using Trigonometry to Find Area 5
Answer Section

1 ANS: 2   REF: 019734siii

2 ANS: 1   REF: 060231siii

3 ANS: 4   REF: 089733siii

4 ANS: 2

$$A = 4 \cdot 5\sqrt{3}\,\sin 60 = 20\sqrt{3} \cdot \frac{\sqrt{3}}{2} = 30$$

   REF: 011713a2

5 ANS: 2

$$K = 8 \cdot 12\sin 120 = 96 \cdot \frac{\sqrt{3}}{2} = 48\sqrt{3}$$

   REF: 061508a2

6 ANS: 3

$$K = (10)(18)\sin 46 \approx 129$$

   REF: 081021a2

7 ANS:

30. $K = (10)(6)\sin 30° = 30$

   REF: 010924b

8 ANS:

$$K = ab\sin C = 24 \cdot 30\sin 57 \approx 604$$

   REF: 061034a2

9 ANS:

$$K = ab\sin C = 18 \cdot 22\sin 60 = 396\frac{\sqrt{3}}{2} = 198\sqrt{3}$$

   REF: 061234a2

10 ANS:

$$K = ab\sin C = 6 \cdot 6\sin 50 \approx 27.6$$

   REF: 011429a2

11 ANS:

$$594 = 32 \cdot 46\sin C$$

$$\frac{594}{1472} = \sin C$$

$$23.8 \approx C$$

   REF: 011535a2