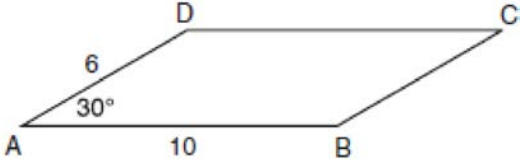


A2.A.74: Using Trigonometry to Find Area 6: Determine the area of a triangle or a parallelogram, given the measure of two sides and the included angle

- 1 An obtuse angle of a parallelogram has a measure of 150° . 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 150° . 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 60° ?
 - 1) $5\sqrt{2}$
 - 2) $10\sqrt{2}$
 - 3) $5\sqrt{3}$
 - 4) $10\sqrt{3}$
- 4 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) $96\sqrt{3}$
- 5 The sides of a parallelogram measure 10 cm and 18 cm. One angle of the parallelogram measures 46° . What is the area of the parallelogram, to the *nearest square centimeter*?
 - 1) 65
 - 2) 125
 - 3) 129
 - 4) 162
- 6 In the accompanying diagram of parallelogram $ABCD$, $m\angle A = 30^\circ$, $AB = 10$, and $AD = 6$. What is the area of parallelogram $ABCD$?
- 7 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*.
- 8 The two sides and included angle of a parallelogram are 18, 22, and 60° . Find its exact area in simplest form.
- 9 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° .
- 10 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.

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Answer Section

1 ANS: 2 REF: 019734siii

2 ANS: 1 REF: 060231siii

3 ANS: 4 REF: 089733siii

4 ANS: 2

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

REF: 061508a2

5 ANS: 3

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

REF: 081021a2

6 ANS:

30

REF: 010924b

7 ANS:

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

REF: 061034a2

8 ANS:

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

REF: 061234a2

9 ANS:

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

REF: 011429a2

10 ANS:

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

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

$$23.8 \approx C$$

REF: 011535a2