

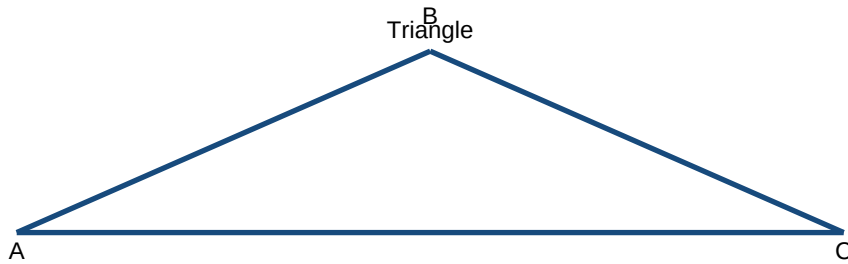
GRADE 6 MATHEMATICS

TRIANGLES & QUADRILATERALS

Complete printable worksheet pack

Classification • properties • angles • symmetry • missing sides • reasoning

Worksheet 1: Triangle Classification & Properties



Use correct geometric vocabulary and show your working.

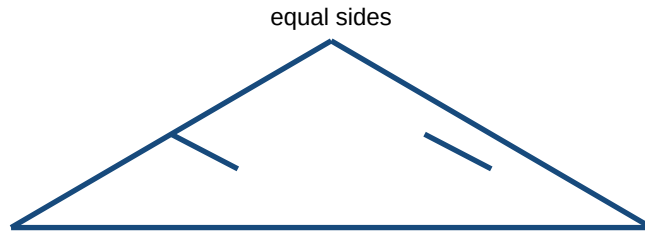
1. Classify each triangle by sides: (a) 6, 6, 6 cm (b) 5, 5, 8 cm (c) 4, 6, 7 cm.
2. Classify by angles: (a) 90° , 45° , 45° (b) 60° , 60° , 60° (c) 110° , 40° , 30° .
3. Find the missing angle of a triangle with angles 48° and 67° .
4. An isosceles triangle has equal angles of 52° . Find the third angle.
5. A triangle has sides 7 cm, 10 cm and 7 cm. Name its type by sides.
6. Can a triangle have angles 90° , 60° and 40° ? Explain.
7. Find x if a triangle has angles x° , $(2x)^\circ$ and $(3x)^\circ$.
8. Challenge: A triangle has angles $(x+10)^\circ$, $(2x+5)^\circ$ and $(3x-15)^\circ$. Find x and all angles.

Answer Key — Worksheet 1: Triangle Classification & Properties

1. (a) Equilateral (b) Isosceles (c) Scalene.
2. (a) Right isosceles (b) Equilateral/acute (c) Obtuse scalene.
3. 65° .
4. 76° .
5. Isosceles.
6. No; angles total 190° .
7. $x=30$; angles $30^\circ, 60^\circ, 90^\circ$.
8. $x=30$; angles $40^\circ, 65^\circ, 75^\circ$.

Teacher note: Accept equivalent correct methods and clearly explained reasoning.

Worksheet 2: Triangle Angles & Missing Sides



Use correct geometric vocabulary and show your working.

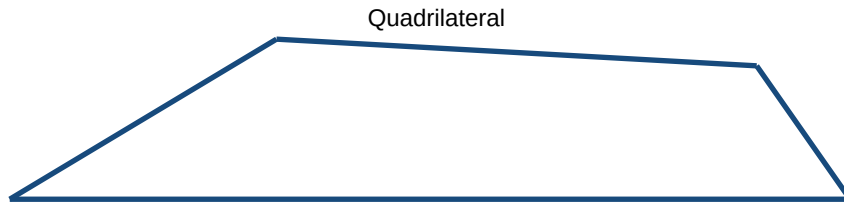
1. An isosceles triangle has vertex angle 44° . Find each base angle.
2. An equilateral triangle has perimeter 39 cm. Find each side.
3. A triangle has sides 8 cm, 11 cm and x cm. Give the possible whole-number values of x that make a triangle.
4. A right triangle has one acute angle of 37° . Find the other acute angle.
5. An isosceles triangle has equal sides of 13 cm and base 10 cm. Find its perimeter.
6. A triangle has perimeter 42 cm. Two sides are 12 cm and 15 cm. Find the third side.
7. An equilateral triangle has side 8.5 cm. Find its perimeter.
8. Challenge: An isosceles triangle has perimeter 50 cm and its base is 14 cm. Find each equal side.

Answer Key — Worksheet 2: Triangle Angles & Missing Sides

1. 68° each.
2. 13 cm.
3. 4,5,6,7,8,9,10,11,12,13,14,15,16,17,18 (triangle inequality gives 4–18).
4. 53° .
5. 36 cm.
6. 15 cm.
7. 25.5 cm.
8. 18 cm each.

Teacher note: Accept equivalent correct methods and clearly explained reasoning.

Worksheet 3: Quadrilateral Properties



Use correct geometric vocabulary and show your working.

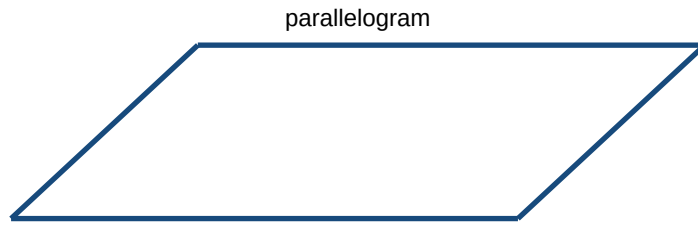
1. Name the quadrilateral: (a) 4 equal sides and 4 right angles (b) opposite sides parallel and equal (c) exactly one pair of parallel sides.
2. How many degrees are there in the interior angles of any quadrilateral altogether?
3. Find the missing angle in a quadrilateral with angles 82° , 96° , 110° and x° .
4. A parallelogram has one angle of 68° . Find all four angles.
5. A rectangle has length 14 cm and width 9 cm. Find its perimeter and area.
6. A square has perimeter 52 cm. Find its side length and area.
7. State two properties shared by a rectangle and a parallelogram.
8. Challenge: A quadrilateral has angles $(2x)^\circ$, $(3x+10)^\circ$, $(x+20)^\circ$ and 80° . Find x and all four angles.

Answer Key — Worksheet 3: Quadrilateral Properties

1. (a) Square (b) Parallelogram (c) Trapezium/trapezoid.
2. 360° .
3. 72° .
4. $68^\circ, 112^\circ, 68^\circ, 112^\circ$.
5. Perimeter 46 cm; area 126 cm^2 .
6. Side 13 cm; area 169 cm^2 .
7. Opposite sides are parallel; opposite sides are equal.
8. $x=35$; angles $70^\circ, 115^\circ, 55^\circ, 80^\circ$.

Teacher note: Accept equivalent correct methods and clearly explained reasoning.

Worksheet 4: Special Quadrilaterals & Symmetry



Use correct geometric vocabulary and show your working.

1. How many lines of symmetry does a square have?
2. How many lines of symmetry does a rectangle (that is not a square) have?
3. How many lines of symmetry does a general parallelogram have?
4. Which quadrilateral has four equal sides but does not necessarily have four right angles?
5. Which quadrilateral has two pairs of adjacent equal sides?
6. State whether each is always true: (a) diagonals of a rectangle are equal (b) diagonals of a square are equal (c) all parallelograms have four equal sides.
7. A rhombus has perimeter 64 cm. Find each side.
8. Challenge: A quadrilateral has four right angles and all four sides equal. Name it and list three properties.

Answer Key — Worksheet 4: Special Quadrilaterals & Symmetry

1. 4.
2. 2.
3. 0.
4. Rhombus.
5. Kite.
6. (a) True (b) True (c) False.
7. 16 cm.
8. Square; four equal sides, four right angles, opposite sides parallel (also 4 lines of symmetry).

Teacher note: Accept equivalent correct methods and clearly explained reasoning.

Worksheet 5: Quadrilateral Reasoning & Real Life

trapezium / trapezoid



Use correct geometric vocabulary and show your working.

1. A rectangular garden is 18 m by 12 m. Find its perimeter and area.
2. A square tile has side 25 cm. Find its perimeter and area.
3. A parallelogram has base 15 cm and height 8 cm. Find its area.
4. A trapezium has parallel sides 12 cm and 20 cm and height 7 cm. Find its area.
5. A rhombus has diagonals 10 cm and 16 cm. Find its area using $A = \frac{1}{2}d_1d_2$.
6. A rectangular picture frame is 40 cm by 30 cm. A 25 cm by 15 cm photo is placed inside. Find the visible border area.
7. A parallelogram has area 144 cm^2 and base 18 cm. Find its perpendicular height.
8. Challenge: A trapezium has area 180 cm^2 , parallel sides 14 cm and 16 cm. Find its height.

Answer Key — Worksheet 5: Quadrilateral Reasoning & Real Life

1. Perimeter 60 m; area 216 m².
2. Perimeter 100 cm; area 625 cm².
3. 120 cm².
4. 112 cm².
5. 80 cm².
6. 825 cm².
7. 8 cm.
8. 12 cm.

Teacher note: Accept equivalent correct methods and clearly explained reasoning.

Worksheet 6: Triangles & Quadrilaterals Challenge

rectangle



Use correct geometric vocabulary and show your working.

1. A triangle has angles in the ratio 2:3:4. Find all three angles and classify the triangle by angles.
2. A quadrilateral has angles in the ratio 2:3:4:6. Find all four angles.
3. A square and a rectangle have the same perimeter of 48 cm. The rectangle is 16 cm long. Find the rectangle's width and compare the areas.
4. A parallelogram has base 24 cm and area 312 cm^2 . Find its height.
5. A rhombus has diagonals 18 cm and 24 cm. Find its area.
6. A triangle and a parallelogram have the same base of 14 cm. The triangle's height is 10 cm and the parallelogram's height is 6 cm. Find both areas.
7. A regular hexagon can be divided into 6 equilateral triangles. If each triangle has side 8 cm, find the perimeter of the hexagon.
8. Challenge: A quadrilateral has angles $(x+20)^\circ$, $(2x+10)^\circ$, $(3x-20)^\circ$ and $(4x-10)^\circ$. Find x and all angles.

Answer Key — Worksheet 6: Triangles & Quadrilaterals Challenge

1. $40^\circ, 60^\circ, 80^\circ$; acute scalene.
2. $48^\circ, 72^\circ, 96^\circ, 144^\circ$.
3. Width 8 cm; rectangle area 128 cm^2 ; square area 144 cm^2 .
4. 13 cm.
5. 216 cm^2 .
6. Triangle 70 cm^2 ; parallelogram 84 cm^2 .
7. 48 cm.
8. $x=36$; angles $56^\circ, 82^\circ, 88^\circ, 134^\circ$.

Teacher note: Accept equivalent correct methods and clearly explained reasoning.