Year 7 Worksheet 7: Geometry

Question 1: Properties of 2D shapes.

1	Identify the type of triangle that has all three sides of different lengths.
2	Identify a four-sided polygon with all sides of different lengths and no right angles.
3	In a right-angled triangle, if one angle is 90 degrees, what are the measures of the other two angles?
4	If the length of a rectangle is 8 cm and the width is 5 cm, what is its perimeter?
5	In an equilateral triangle, if one side measures 6 cm, what are the lengths of the other two sides?

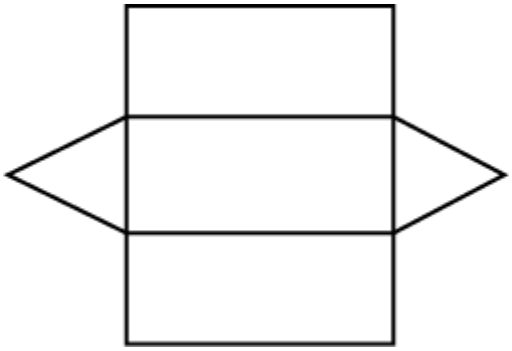
6	What is the sum of the angles in a quadrilateral?
7	In an isosceles triangle, if one of the base angles measures 40 degrees, what is the measure of the third angle?
8	If the base of a parallelogram is 12 cm and the height is 8 cm, what is its area?
9	In a triangle, one angle measures 60 degrees, and another angle measures 45 degrees. What is the measure of the third angle?
10	In a right-angled triangle, if one leg measures 4 units and the other leg measures 3 units, what is the length of the hypotenuse?

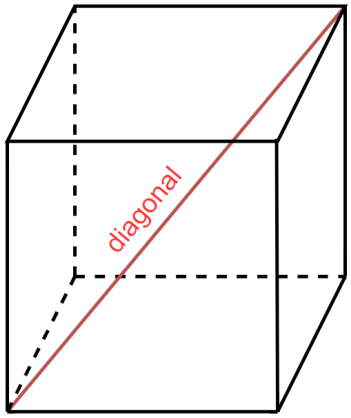
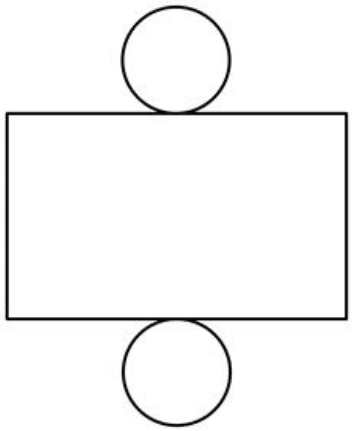
Question 2: Area and perimeter of polygons.

1	If the length of a rectangle is 12 cm and the width is 8 cm, what is its area?
2	Find the perimeter of a square with sides measuring 5 cm each.
3	Calculate the area of a triangle with a base of 6 cm and a height of 9 cm.
4	Determine the perimeter of a parallelogram with a base of 10 cm and a side length of 7 cm.
5	Find the perimeter of a quadrilateral with side lengths of 4 cm, 6 cm, 8 cm, and 10 cm.

6	Calculate the perimeter of a regular hexagon with sides measuring 5 cm each.
7	Determine the area of a trapezoid with bases of 7 cm and 9 cm and a height of 4 cm.
8	Find the perimeter of an irregular polygon with side lengths of 6 cm, 8 cm, 5 cm, and 7 cm.
9	Calculate the perimeter of a regular octagon with sides measuring 10 cm each.
10	Determine the perimeter of a pentagon with sides measuring 12 cm, 8 cm, 10 cm, 7 cm, and 9 cm.

Question 3: Properties of 3D shapes.

1	If each side of a cube measures 4 cm, what is its volume?
2	The length, width, and height of a rectangular prism are 5 cm, 3 cm, and 2 cm, respectively. What is its total surface area?
3	If the radius of a cylinder is 3 cm and its height is 8 cm, what is its volume?
4	The base of a triangular pyramid is an equilateral triangle with sides of 6 cm each, and the height of the pyramid is 9 cm. What is its total surface area? 

5	What is the length of the diagonal of a cube with sides of 7 cm each? 
6	The length, width, and height of a rectangular prism are 10 cm, 4 cm, and 6 cm, respectively. What is its volume?
7	If the radius of a cylinder is 5 cm and its height is 12 cm, what is its total surface area? 

8	If the base of a square pyramid has sides of 8 cm each, and the height of the pyramid is 10 cm, what is its volume?
9	Calculate the total surface area of a cube with sides of 9 cm each.
10	The base of a triangular prism is a right triangle with base 6 cm, height 8 cm, and the prism's height is 12 cm. What is its volume?

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Answer Key

Question 1: Properties of 2D shapes.

1	Identify the type of triangle that has all three sides of different lengths. Answer: Scalene triangle.
2	Identify a four-sided polygon with all sides of different lengths and no right angles. Answer: It is a scalene quadrilateral or irregular quadrilateral.
3	In a right-angled triangle, if one angle is 90 degrees, what are the measures of the other two angles? Answer: Both acute, adding up to 90 degrees.
4	If the length of a rectangle is 8 cm and the width is 5 cm, what is its perimeter? Answer: The perimeter is 26 cm (2 × (8 cm + 5 cm)).
5	In an equilateral triangle, if one side measures 6 cm, what are the lengths of the other two sides? Answer: The other two sides are also 6 cm each.
6	What is the sum of the angles in a quadrilateral? Answer: The sum of the angles in a quadrilateral is 360 degrees.
7	In an isosceles triangle, if one of the base angles measures 40 degrees, what is the measure of the third angle? Answer: So, the third angle measures 180 degrees - (40 degrees + 40 degrees) = 180 degrees - 80 degrees = 100 degrees.

8	If the base of a parallelogram is 12 cm and the height is 8 cm, what is its area? Answer: The area is 96 square cm (12 cm × 8 cm).
9	In a triangle, one angle measures 60 degrees, and another angle measures 45 degrees. What is the measure of the third angle? Answer: The measure of the third angle is 75 degrees.
10	In a right-angled triangle, if one leg measures 4 units and the other leg measures 3 units, what is the length of the hypotenuse? Answer: The length of the hypotenuse is 5 units

Question 2: Area and perimeter of polygons.

1	If the length of a rectangle is 12 cm and the width is 8 cm, what is its area? Answer: The area is 96 square cm (12 cm × 8 cm).
2	Find the perimeter of a square with sides measuring 5 cm each. Answer: The perimeter is 20 cm (4 × 5 cm).
3	Calculate the area of a triangle with a base of 6 cm and a height of 9 cm. Answer: The area is 27 square cm (1/2 × 6 cm × 9 cm).
4	Determine the perimeter of a parallelogram with a base of 10 cm and a side length of 7 cm. Answer: The perimeter is 34 cm (2 × (10 cm + 7 cm)).
5	Find the perimeter of a quadrilateral with side lengths of 4 cm, 6 cm, 8 cm, and 10 cm. Answer: The perimeter is 28 cm (using the semi-perimeter and Heron's formula).

6	Calculate the perimeter of a regular hexagon with sides measuring 5 cm each. Answer: The perimeter is 30 cm (6 × 5 cm).
7	Determine the area of a trapezoid with bases of 7 cm and 9 cm and a height of 4 cm. Answer: The area is 32 square cm (1/2 × (7 cm + 9 cm) × 4 cm).
8	Find the perimeter of an irregular polygon with side lengths of 6 cm, 8 cm, 5 cm, and 7 cm. Answer: The perimeter is 26 cm (6 cm + 8 cm + 5 cm + 7 cm).
9	Calculate the perimeter of a regular octagon with sides measuring 10 cm each. Answer: Perimeter = 8 sides × 10 cm/side = 80 cm
10	Determine the perimeter of a pentagon with sides measuring 12 cm, 8 cm, 10 cm, 7 cm, and 9 cm. Answer: The perimeter is 46 cm (12 cm + 8 cm + 10 cm + 7 cm + 9 cm).

Question 3: Properties of 3D shapes.

1	If each side of a cube measures 4 cm, what is its volume? Answer: The volume of the cube is 64 cubic cm (4 cm × 4 cm × 4 cm).
2	The length, width, and height of a rectangular prism are 5 cm, 3 cm, and 2 cm, respectively. What is its total surface area? Answer: The total surface area is 62 square cm (2 × (5 cm × 3 cm + 5 cm × 2 cm + 3 cm × 2 cm)).

3	If the radius of a cylinder is 3 cm and its height is 8 cm, what is its volume? Answer: The volume of the cylinder is 72π cubic cm (π × 3 cm × 3 cm × 8 cm).
4	The base of a triangular pyramid is an equilateral triangle with sides of 6 cm each, and the height of the pyramid is 9 cm. What is its total surface area? Answer: Height = $\sqrt{(6^2 + 3^2)}$ = 6.708 cm 2 x Triangle = 2 x(½ x base x height) = 40.25 cm² 3 x Rectangle = 3 x (base x height) = 3x9x6 = 162 cm² Total = 202.25 cm²
5	What is the length of the diagonal of a cube with sides of 7 cm each? Answer: The length of the diagonal is 7√3 cm ≈ 12.12 cm. (using the Pythagorean theorem).
6	The length, width, and height of a rectangular prism are 10 cm, 4 cm, and 6 cm, respectively. What is its volume? Answer: The volume of the rectangular prism is 240 cubic cm (10 cm × 4 cm × 6 cm).
7	If the radius of a cylinder is 5 cm and its height is 12 cm, what is its total surface area? Answer: The total surface area is 170π square cm (2π × 5 cm × 5 cm + 2π × 5 cm × 12 cm).
8	If the base of a square pyramid has sides of 8 cm each, and the height of the pyramid is 10 cm, what is its volume? Answer: The volume of the square pyramid is 213.33 cubic cm (1/3 × 8 cm × 8 cm × 10 cm).

9	Calculate the total surface area of a cube with sides of 9 cm each. Answer: The total surface area is 486 square cm (6 × (9 cm × 9 cm)).
10	The base of a triangular prism is a right triangle with base 6 cm, height 8 cm, and the prism's height is 12 cm. What is its volume? Answer: The volume of the triangular prism is 288 cubic cm (1/2 × 6 cm × 8 cm × 12 cm).