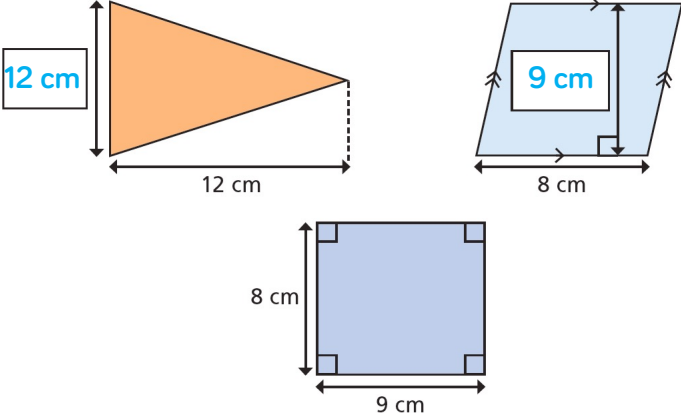
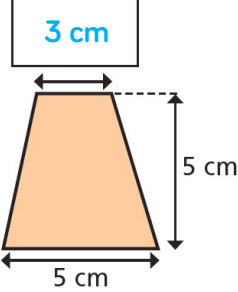
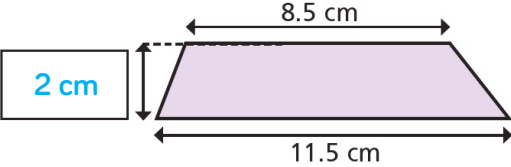
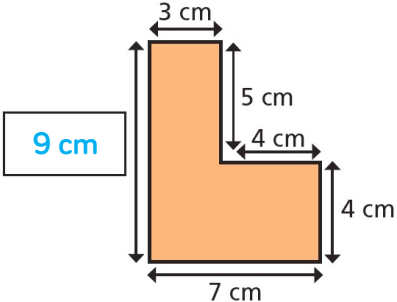
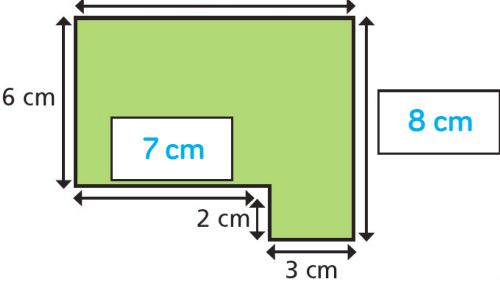


Y8 – Summer – Block 2 – Step 1 – Calculate the area of triangles, rectangles and parallelograms Answers

Question	Answer
1	a) 15 cm^2 b) 16 cm^2 c) 30 cm^2 d) 24 m^2
2	The 6.3 cm length is not the perpendicular height of the triangle. She does not have enough information to work out the area of the triangle.
3	a) 54 cm^2 b) 40 mm^2
4	4.5 cm
5	$h = 4 \text{ cm}$
6	a) $2\frac{1}{4} \text{ m}^2$ b) 0.385 km^2 or $385,000 \text{ m}^2$ c) 10 mm^2 or 0.1 cm^2
7	 <p>The diagram shows three shapes: <ul style="list-style-type: none"> An orange triangle with a vertical height of 12 cm and a horizontal base of 12 cm. A dashed vertical line indicates the height from the top vertex to the base. A blue parallelogram with a horizontal base of 8 cm and a vertical height of 9 cm. A right-angle symbol is shown at the base of the height line. A blue square with a side length of 8 cm by 9 cm. Right-angle symbols are shown at all four corners. </p>
8	$28:68 = 7:17$
9	20 cm^2

Y8 - Summer - Block 2 - Step 2 - Calculate the area of a trapezium Answers

Question	Answer
1	a) $5 \times 4 + \frac{1}{2} \times 3 \times 4 = 26 \text{ cm}^2$ b) $\frac{1}{2} \times (5 + 8) \times 4 = 26 \text{ cm}^2$ Students need to justify why they prefer one method over the other.
2	a) 25 cm^2 b) 10 m^2 c) 45 cm^2 d) 47.7 mm^2
3	a) 34 cm^2 b) 5.4 m^2 c) In part a), a possible mistake would be to use the sloping length of 5 cm instead of the perpendicular height of 4 cm. In part b), a possible mistake would be not to convert the lengths to the same units.
4	The sum of the parallel sides is the same and the perpendicular height is the same.
5	a)  b) 
6	multiple possible answers, e.g.: $x = 3 \text{ cm}, y = 5 \text{ cm}$ $x = 1 \text{ cm}, y = 7 \text{ cm}$ $x = 2.2 \text{ cm}, y = 5.8 \text{ cm}$ x and y must sum to 8 cm.
7	When $a = b$, area of trapezium = $\frac{1}{2} \times (b + b) \times h = bh =$ area of parallelogram

Question	Answer
1	<p>a)</p>  <p>perimeter = 32 cm</p> <p>b)</p>  <p>perimeter = 36 cm</p>
2	<p>a) 43 m²</p> <p>b) 184 m²</p>
3	<p>No. He can work out the sum of the two lengths either side of the T, and so work out the perimeter. He does not need to know these lengths individually.</p>
4	<p>204 mm²</p>
5	<p>a) 84 cm²</p> <p>b) 22 cm²</p> <p>c) 75.5 m²</p> <p>d) 3.4 cm²</p>
6	<p>54 cm²</p>
7	<p>$\frac{3}{10}$</p>
8	<p>the middle hexagon</p>

Y8 – Summer – Block 2 – Step 4 – Investigate area of a circle Answers

Question	Answer
1	<p>a) 30°</p> <p>b) the diameter of the circle <input type="checkbox"/></p> <p>the radius of the circle <input type="checkbox"/></p> <p>the circumference of the circle <input type="checkbox"/></p> <p>half the circumference of the circle <input checked="" type="checkbox"/></p> <p>The circumference of the circle is the sum of all the arcs. Half of the arcs are the top edge of the shape and half of the arcs are the bottom edge of the shape.</p> <p>c) the diameter of the circle <input type="checkbox"/></p> <p>the radius of the circle <input checked="" type="checkbox"/></p> <p>the circumference of the circle <input type="checkbox"/></p> <p>half the circumference of the circle <input type="checkbox"/></p> <p>d) The shape is approximately a parallelogram with length πr and height r. So the area = $\pi r \times r = \pi r^2$</p>
2	<p>They both create a shape that is approximately a parallelogram with length πr and height r. Aisha's shape has more sectors and is closer to a parallelogram.</p>
3	<p>a) side of large square = $2r$, so area of large square = $2r \times 2r = 4r^2$ area of small square = $4r^2 \div 2 = 2r^2$ The area of the circle is between the area of the large square and the area of the small square, so lies between $2r^2$ and $4r^2$</p> <p>b) The value of π is approximately 3.14, which lies between 2 and 4</p>

Answers

Question	Answer
1	a) $64\pi \text{ cm}^2$ b) $100\pi \text{ mm}^2$
2	a) $16\pi \text{ cm}^2$ b) $25\pi \text{ mm}^2$
3	The given dimension was the same in each case. In question 1, the given dimension was the radius and in question 2 it was the diameter.
4	a) $0.16\pi \text{ cm}^2$ b) $36\pi \text{ km}^2$ c) $\frac{4}{9}\pi \text{ m}^2$ d) $16.81\pi \text{ mm}^2$ e) $\frac{9}{16}\pi \text{ m}^2$ f) $30.25\pi \text{ cm}^2$
5	$5,600\pi \text{ cm}^2$
6	a) 8 cm b) 24 m
7	a) $8\pi \text{ cm}^2$ b) $\frac{81}{8}\pi = 10.125\pi \text{ mm}^2$ c) $\frac{81}{4}\pi = 20.25\pi \text{ cm}^2$ d) $\frac{100}{3}\pi \text{ mm}^2$
8	10 cm

Y8 – Summer – Block 2 – Step 6 – Calculate the area of a circle and parts of a circle with a calculator

Answers

Question	Answer
1	a) 78.5 mm^2 b) 1.6 m^2
2	a) 747 cm^2 b) 187 cm^2
3	a) 6.2 cm b) 12.4 cm
4	drawing of a circle with radius of 4.4 cm
5	52.4 mm^2 (to 3 d.p.)
6	8
7	$54 - 8\pi \text{ cm}^2$ 28.9 cm^2
8	a) $2,250\pi \text{ cm}^2$ $7,070 \text{ cm}^2$ b) 62.5%
9	Jack

Y8 – Summer – Block 2 – Step 7 – Calculate the perimeter and area of compound shapes (2) Answers

Question	Answer
1	<p>a) 16 cm The circle touches the square on both sides, so the diameter is the same as the side of the square.</p> <p>b) 8 cm</p> <p>c) 201.06 cm^2</p> <p>d) area of square = $16^2 = 256 \text{ cm}^2$ shaded area = area of square – area of circle = $256 - 201.06 = 54.94 \text{ cm}^2$</p>
2	<p>a) shaded area = area of large circle – area of small circle = $5^2\pi - 3^2\pi = 16\pi \text{ cm}^2$</p> <p>b) shaded area = area of large circle – areas of small circles = $5^2\pi - 3^2\pi - 1.5^2\pi = 13.75\pi \text{ cm}^2$</p> <p>c) shaded area = area of large circle – area of small circle = $6^2\pi - 4^2\pi = 20\pi \text{ cm}^2$ Some students may have worked out the difference of the squares of the radii and then multiplied by π.</p>
3	<p>a) area of rectangle = $8 \times 9 = 72 \text{ cm}^2$ area of semicircle = $\pi \times 4^2 \div 2 = 25.1 \text{ cm}^2$ (to 3 d.p.) total area = $72 + 25.1 = 97.1 \text{ cm}^2$ (to 3 d.p.)</p> <p>b) 38.6 cm (to 3 d.p.)</p>
4	169 m ² (to 3 d.p.)
5	$27 + 3.5\pi \text{ mm}$
6	22.1 cm (to 3 d.p.)
7	50.3 m (to 3 d.p.)