Name: Form:

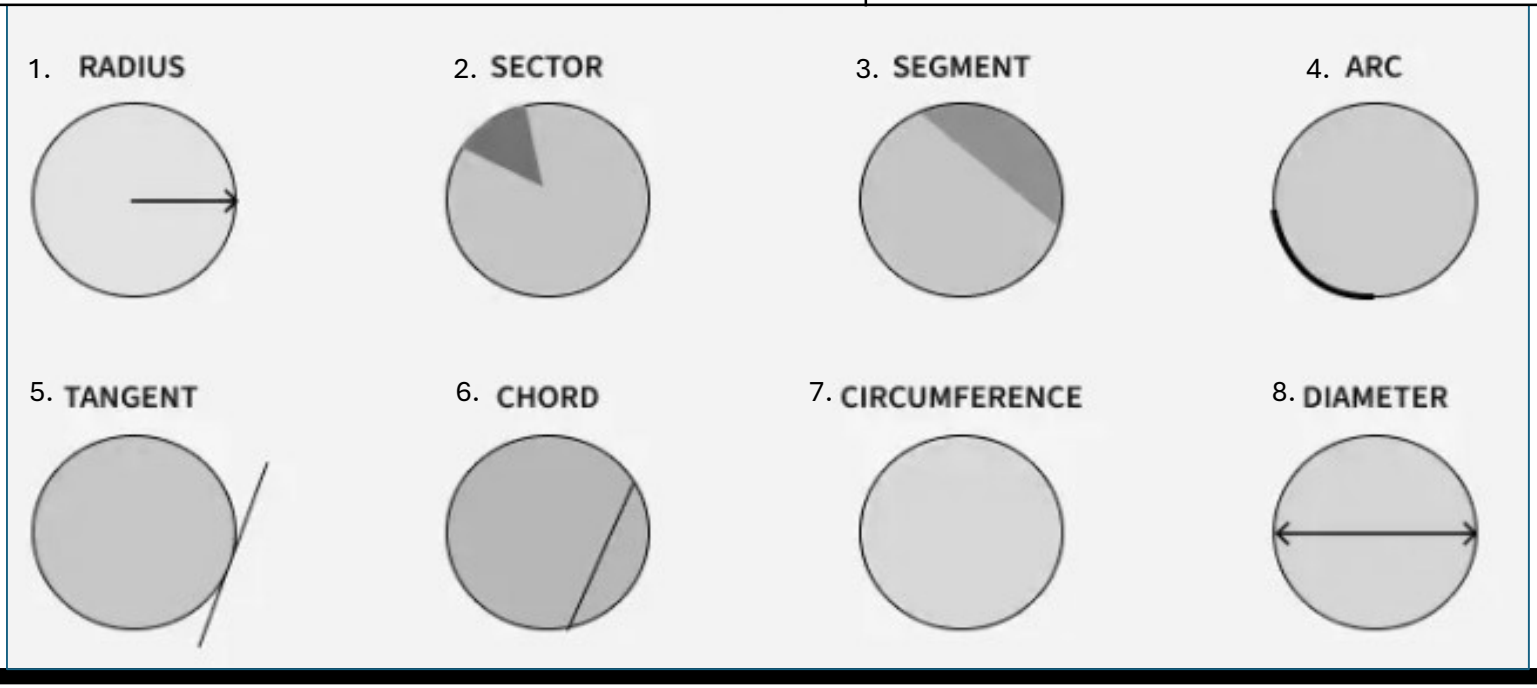
MATHS FUNDAMENTAL KNOWLEDGE QUIZ BOOKLET

Higher

Unit 1: Area and Angles	
Definition/Question	**Answer**
1. Angles on a straight-line sum to	180
2. Angles in a triangle sum to	180
3. Angles around a point sum to	360
4. Angles in a quadrilateral sum to	360
5. Formula for calculating exterior angle of a polygon	$360 \div no.of\ sides$
6. Formula for calculating interior angle of a polygon	180 – exterior angle
7. Formula for calculating sum of angles in a polygon	$(n-2) \times 180$
8. Formula for calculating area of rectangle or parallelogram	$base \times height$
9. Formula for calculating area of a triangle.	$\frac{base \times height}{2}$
10. Formula for calculating area of a trapezium.	$\frac{1}{2}(a+b)$ x h

Unit 2:Properties of Circles

Calculate	Formula
1. Area of circle.	$\pi \times r^2$
2. Circumference of Circle.	$\pi \times d$
3. Length of an arc.	$\pi \times d \times \frac{\theta}{360}$
4. Area of a sector.	$\pi \times r^2 \times \frac{\theta}{360}$

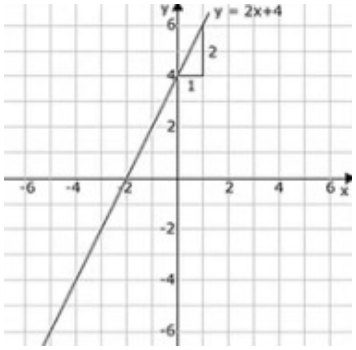
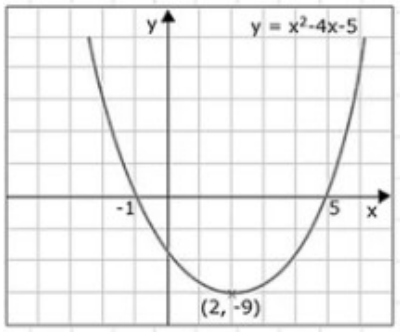
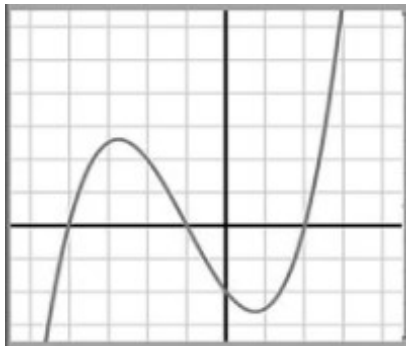
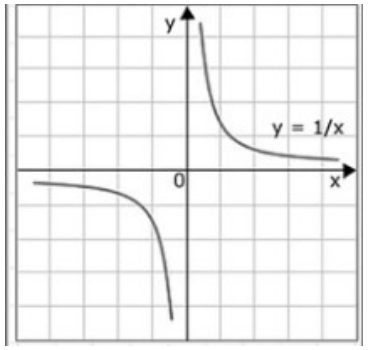


Unit 3:Properties of 3D Shapes

Question/Definition	Answer
1. A single flat surface of a 3D shape.	Face
2. The line segment that connects faces.	Edges
3. The corner of a 3D shape.	Vertices
4. A measurement of the 3D space occupied by a solid, liquid or gas.	Volume
5. Formula for Volume of a prism.	Area of cross section x length
6. Formula for Volume of a cylinder.	$\pi \times r^2 \times$ h
7. I have 6 faces, 12 edges, 8 vertices.	Cube or Cuboid
8. I have 5 faces, 9 edges, 6 vertices.	Triangular prism
9. I have 3 faces, 2 edges and 0 vertices.	Cylinder
10. I have 2 faces, 1 edge, 1 vertex.	Cone

Unit 4: Probability	
Definition/Question	**Answer**
1. The probabilities of all possible outcomes of an event always add up to	1 or 100%
2. How do we represent probabilities?	Fraction or Decimal
3. What is the estimated probability of an event happening called?	Relative frequency
4. How do you calculate the relative frequency of an event?	$\frac{Number\ of\ times\ the\ event\ happened}{Total\ number\ of\ trials}$
5. How can you improve the accuracy of an estimated probability?	Increase the number of trials
6. What should each branch in a tree diagram sum to?	1
7. How do you calculate the probability across branches in a tree diagram?	Multiply the probabilities
8. What does $A \cup B$ *mean*?	A or B
9. What does $A \cap B$ *mean*?	A and B, the intersection of the Venn diagram
10. What does A' mean?	The complement of A, not A.

Unit 5: Graphs	
Question/Definition	**Answer**
1. The order of co-ordinates.	(x, y)
2. The equation for a straight line.	$y = mx + c$
3. Method to calculate the gradient of a straight-line graph.	$\frac{y2 - y1}{x2 - x1}$
4. Name the type of graph	

			
Linear Graph	Quadratic Graph	Cubic Graph	Reciprocal Graph
5. Where a linear graph crosses the y-axis.			Y-intercept
6. How steep a line is.			Gradient

Unit 6: Quadratic Graphs

Definition/Question	Answer
1. A mathematical statement in which two expressions are connected by an equal sign.	Equation
2. What is the general equation of a quadratic graph?	$y = x^2 + bx + c$
3. What are the roots of a quadratic equation?	The x-intercept(s)
4. What is a turning point on a graph?	A maximum or minimum point
5. Describe a quadratic graph with a negative x^2 term.	∩ —shaped curve.
6. When using an iterative formula, what does a change of sign between two x-values tell you?	That the equation has a root between those two x-values
7. What should be labelled in a sketch of a quadratic graph?	The y-intercept, roots and turning point
8. Where is the line of symmetry on a quadratic graph?	On the vertical line that passes through the turning point.
9. If the quadratic graph has one x-intercept, what does this mean?	There is one real root.
10. If a quadratic graph has no x-intercepts, what does this mean?	There are no real roots.