Maths Knowledge Organiser
YEAR 9 FOUNDATION – UNITS 16 to 20

chaseterraceacademy

Key Language

1	Circumference	The perimeter of a circle
2	Radius	A line from the centre of a circle to the edge
3	Diameter	A line from one side of a circle to the other, going through the centre
4	Tangent	A line that touches a curve (or circle) at a point
5	Arc	Part of the circumference of a circle
6	Sector	An area in a circle enclosed by two radii and an arc (like a section from a pie chart)
7	Chord	A line connecting two points on a curve (not going through the centre of the circle)
8	Segment	An area in a circle enclosed by a chord and an arc
9	Inequality	Used to compare the sizes of two quantities
10	Ratio	Compares a part to another part
11	Rotational Symmetry	the property a shape has when it looks the same after some rotation by a partial turn
12	Order of rotational symmetry	The number of times the shape appears exactly the same in one full turn
13	Rotate (rotation)	Turning a shape (angle, direction, centre of rotation)
14	Translate	Moving a shape from one place to another (vector)
15	Enlarge	Changing the size of a shape (scale factor, centre of enlargement)
16	Scale Factor	The multiplier used to change the size of a shape
17	Frequency	How often something happens
18	Mode (modal)	Most popular group/item
19	Mean	Total divided by quantity
20	Median	Middle number (in order)
21	Range (spread)	Largest value subtract the smallest value

Formulae to Learn
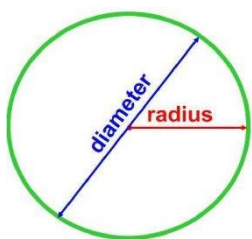
Area of a circle
= π x **radius**^{2}

Circumference of a circle = π x **diameter**
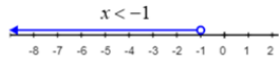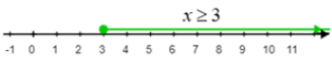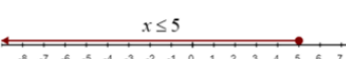
remember that the **diameter** = 2 x **radius**

diameter

radius

Know

More to Learn
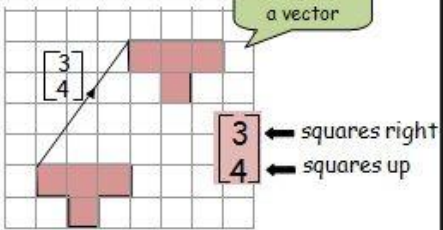
Inequalities on a number line:

Symbol	Words	Example
>	Greater than	$x > 5$
<	Less than	$x < -1$
≥	Greater than or equal to	$x \geq 3$
≤	Less than or equal to	$x \leq 5$

circumference

radius

sector

diameter

chord

segment

tangent
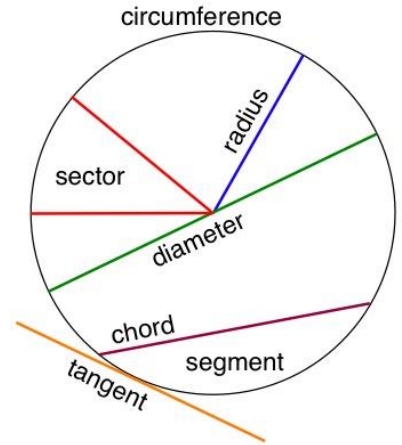
Notes Section:

Translation

Describe with a vector

$\begin{bmatrix} 3 \\ 4 \end{bmatrix}$

3 ← squares right
4 ← squares up

Rotation

To describe a rotation you need:

- the angle of rotation
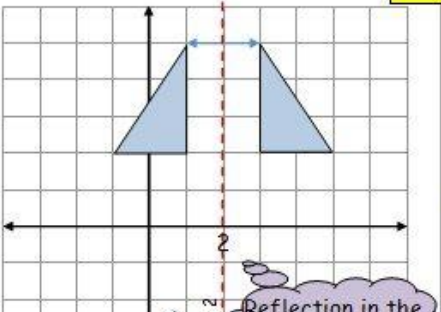- the direction
- the coordinates of the centre

Rotation of 90°, clockwise, about centre (2,-1)

anti-clockwise   clockwise

Centre of rotation

Transformations

Reflection

Reflection in the line x = 2.

Describe by naming the line of symmetry

Enlargement

Centre

Enlargement, scale factor 3, centre (0,7)

Negative enlargements – HIGHER only!

To describe an enlargement you need:
- the scale factor
- coordinates of the centre

Always use **TRACING PAPER** for translation, reflection & rotation.

Enlargement of scale factor -2

Know

PRACTICE QUESTIONS

1. What do we call the perimeter of a circle?

2. What line connects the centre of the circle to the edge?

3. What do you do to a radius to get the diameter?

4. What line touches a circle once?

5. What do we call a part of the circumference?

6. What area is enclosed by two radii and an arc?

7. What line connects two points on a circle?

8. What area is enclosed by a chord and an arc?

9. What inequality sign goes in between these numbers: 6 __ 10?

10. Write the greater/less than or equal to signs.

11. In a class there are 8 left handed pupils and 20 right handed pupils. Write this as a ratio of left handed to right handed pupils.

12. What do we call the property when a shape looks the same after being turned?

13. What do we call the number of times a shape appears the same during one whole turn?

14. What do we call turning a shape?

15. How do we describe a rotation?

16. How do we describe a translation?

17. What does a translation do?

18. What word describes changing the size of a shape?

19. What does a scale factor of 3 do?

20. What is another word for mode?

21. Name three types of average?

22. What does the range tell us?

ANSWERS

1. Circumference
2. Radius
3. x2
4. Tangent
5. Arc
6. Sector
7. Chord
8. Segment
9. <
10. ≥ and ≤
11. 8:20 (or 2:5)
12. Rotational Symmetry
13. Order of Rotational Symmetry
14. Rotation
15. Angle, direction, centre of rotation
16. Vector
17. Move a shape
18. Enlargement (enlarging)
19. Make shape 3 times larger
20. Modal (most)
21. Mean, Median and Mode
22. Spread (difference between max and min)