Maths week 5 and 6- weeks beginning the 4th and 11th May.

Session 1: Arithmetic focus.

Either:

- complete the mark my work document (on the school website, in paper packs and attached to your parent's email.) This is an arithmetic test that someone has completed, can you mark it and then explain which questions they have got wrong and way?
  or
- Go onto classroom secrets https://kids.classroomsecrets.co.uk/?s=arithmetic&post_type=page complete one of the tests.

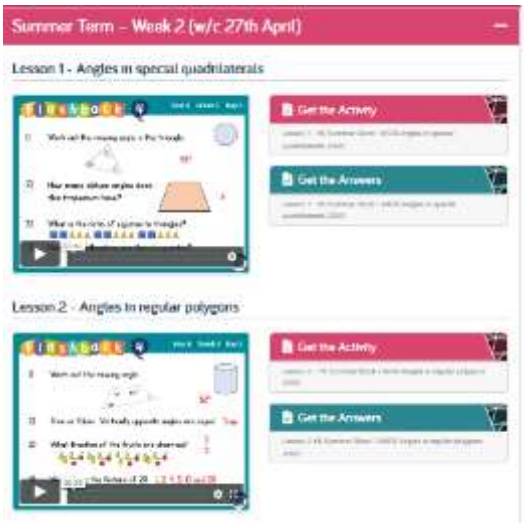
Sessions 2,3,4,5:

Options: for this unit of work there are 2 choices. Either work through the tasks I have set here or complete the work using online resources – it depends on your situation at home. You can always mix and match. Try not to spend too much time doing online work though.

Online option for the next set of lessons:

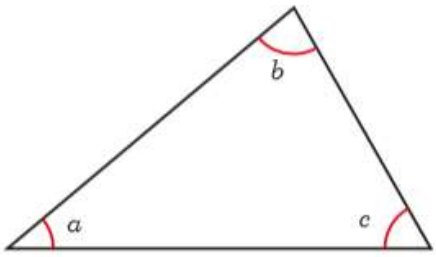
Go to this site https://whiterosemaths.com/homelearning/year-6/

Go to summer term week 1 week beginning 20th April. Watch the videos for each lesson and try to answer the questions in the worksheets. Complete at least lessons 1-4 in the week beginning 20th April and lesson 1 and 2 of the following week. You can look at the problem solving/challenge lessons if you have time.

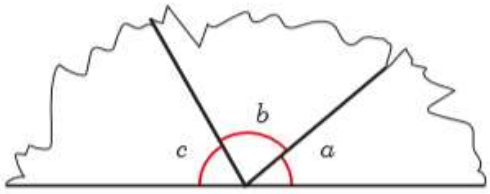


Offline work

Session 2: Investigating angles in a triangle.



a) The three vertices are torn off the triangle and arranged on a straight line.



think the angles in quadrilaterals add up to?

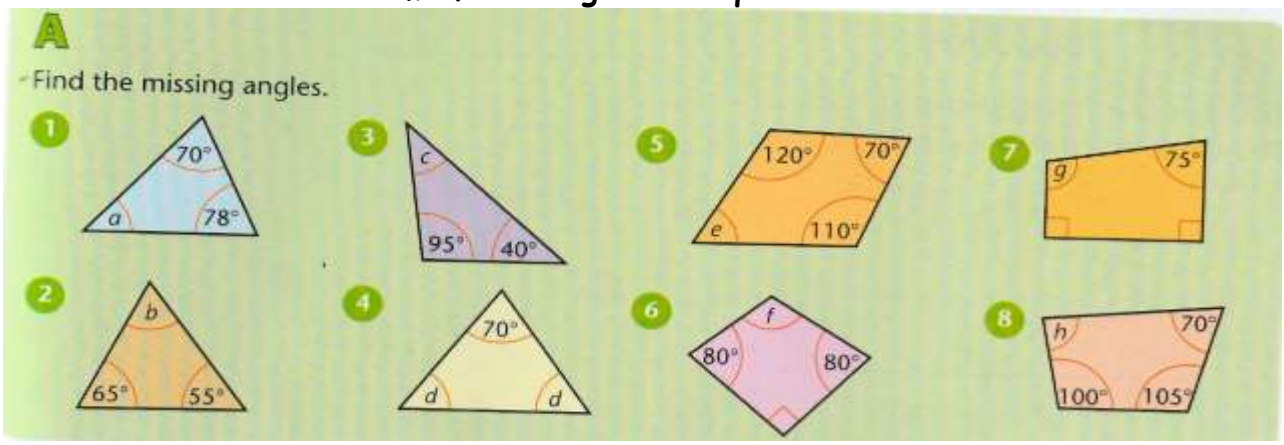
Offline lesson: Look at the picture? What do you notice about the angles? What do the 3 angles add up to? (hint: think about a protractor and how many degrees are shown).

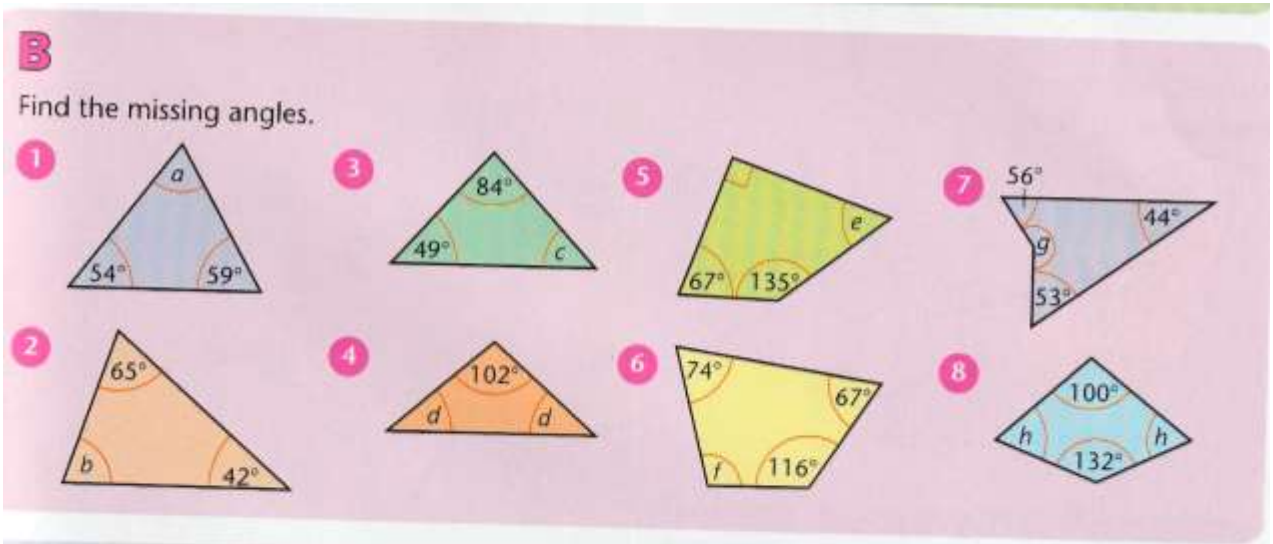
Task- Investigation: cut out a range of different triangles. Can you find any triangles where the angles don't add up to this? What happens with quadrilaterals? What do you

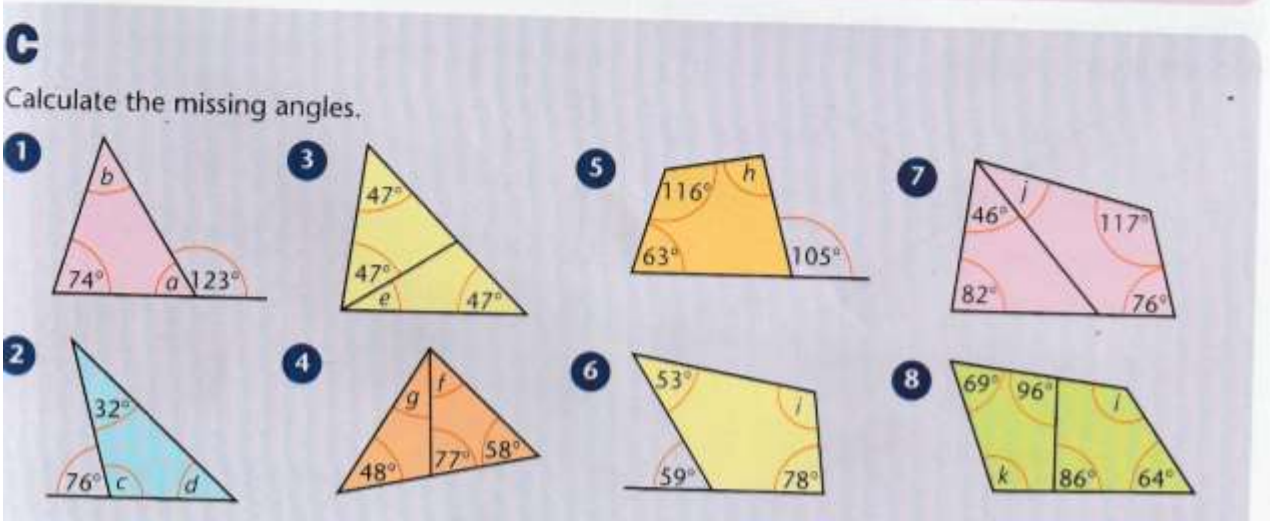
Session 3: Objective: to find unknown angles in triangles and quadrilaterals.

Task: Most of you should be doing the work from section B or C. Remember if it is too easy, move up. Answers are at the end of the work pack so you can check as you go.

Key facts needed: the sum of the angles in a triangle is 180°
The sum of the angles in a quadrilateral is 360°







Session 4: Working out missing angles.

Task: apply your knowledge of angles to answer questions involving angles in different situations. Read the information in the blue box before answering questions (either a,b or c).

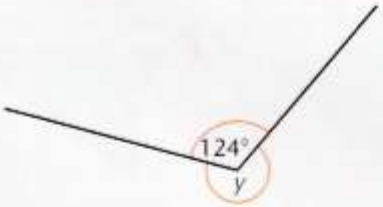
TARGET To find missing angles:
- on a straight line
- at a point
- which are vertically opposite.

ANGLES ON A STRAIGHT LINE
The sum of the angles on a straight line is 180°.

$137° + x = 180°$

$x = 43°$

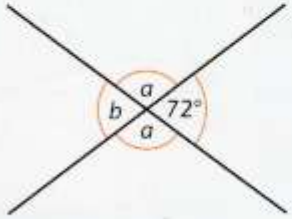
ANGLES AT A POINT
A whole turn is 360°.



$124° + y = 360°$

$y = 236°$

VERTICALLY OPPOSITE ANGLES
Where two straight lines cross each other opposite angles are equal.



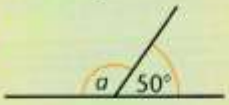
$b = 72°$ (vertically opposite)

$a + 72° = 180°$

$a = 108°$

A

Find the angles marked with letters.

1. 

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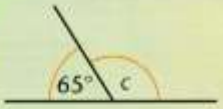
3. 

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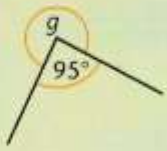
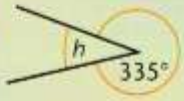
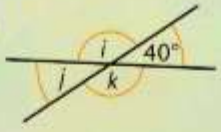
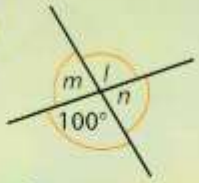
7. 

8. 

9. 

10. 

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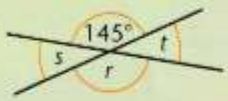
12. 

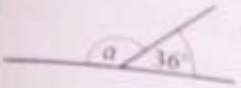
How many degrees clockwise is the turn from:

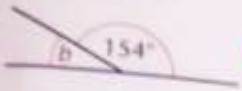
13. S to W
14. NE to SW
15. E to SE
16. NW to E
17. N to NW
18. SE to NE
19. NW to S
20. W to NE?

21. How many degrees is:
    a) $2\frac{1}{2}$ right angles
    b) $1\frac{1}{3}$ right angles?

B

Find the angles marked with letters.

1 

2 

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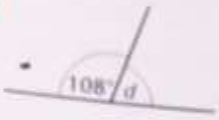
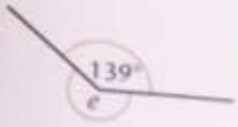
4 

5 

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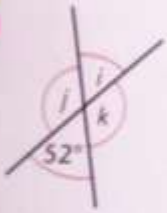
9 

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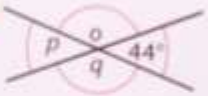
11 

12 

How many degrees does the hour hand turn from:

13 11:00 to 5:00

14 8:00 to 9:00

15 4:00 to 1:00

16 2:00 to 4:00

17 7:00 to 10:00

18 5:00 to 9:00

19 8:00 to 6:00

20 12:00 to 8:00?

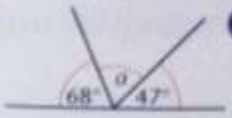
21 What angle is:

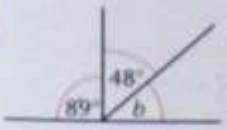
a) $\frac{4}{5}$ of a right angle

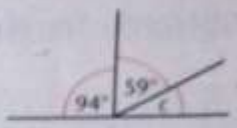
b) $\frac{7}{8}$ of a whole turn.

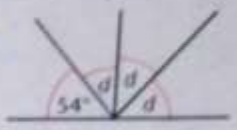
C

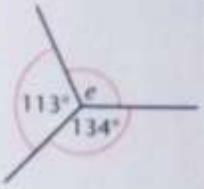
Find the angles marked with letters.

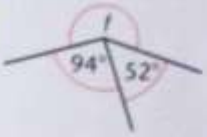
1 

2 

3 

4 

5 

6 

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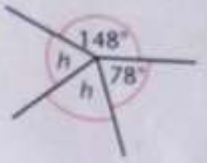
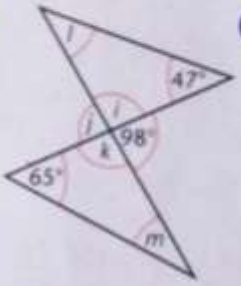
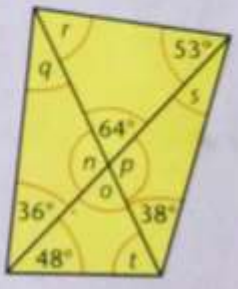
8 

9 

10 

How many degrees does the minute hand turn in:

11 30 minutes

12 1 minute

13 50 minutes

14 40 minutes

15 46 minutes

16 55 minutes

17 12 minutes

18 25 minutes?

19 What angle is:

a) $\frac{3}{5}$ of a right angle

b) $\frac{11}{12}$ of a whole turn.

Session 5: Shape investigation

Task: lesson with a difference today. What can you come up with? Use string/wool to help you. Can you remember what the 3 types of triangles are? If not, you will need to look it up. Draw out your findings, can you spot any patterns?

Egyptian Rope

The ancient Egyptians were said to make right-angled triangles using a rope which was knotted to make 12 equal sections.

If you have a rope knotted like this, what other triangles can you make? (You must have a knot at each corner.)

What regular shapes can you make - that is, shapes with equal sides and equal angles?

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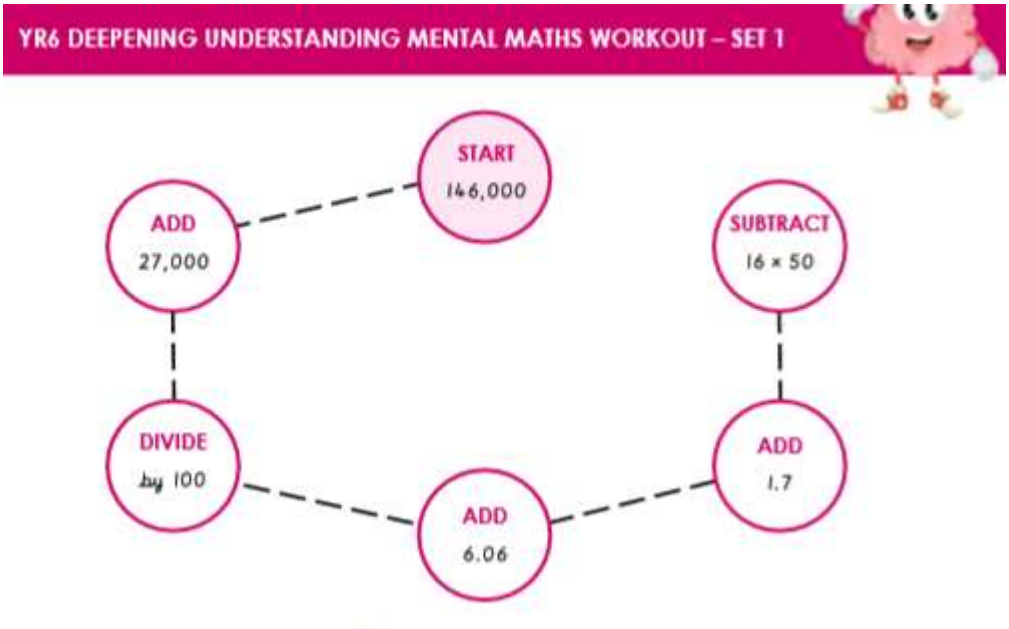
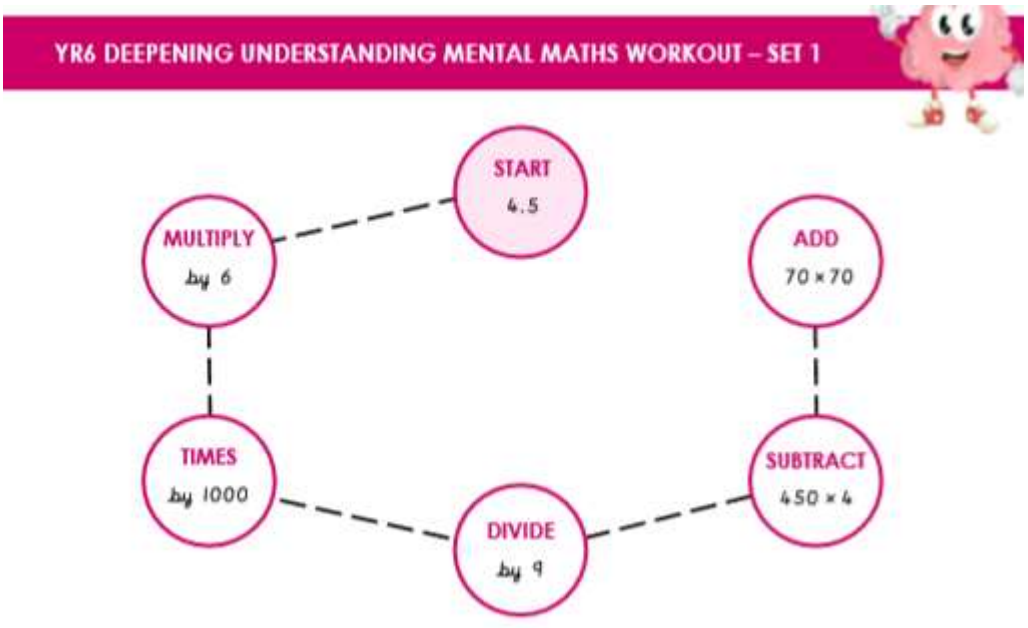
Session 6 – Arithmetic questions

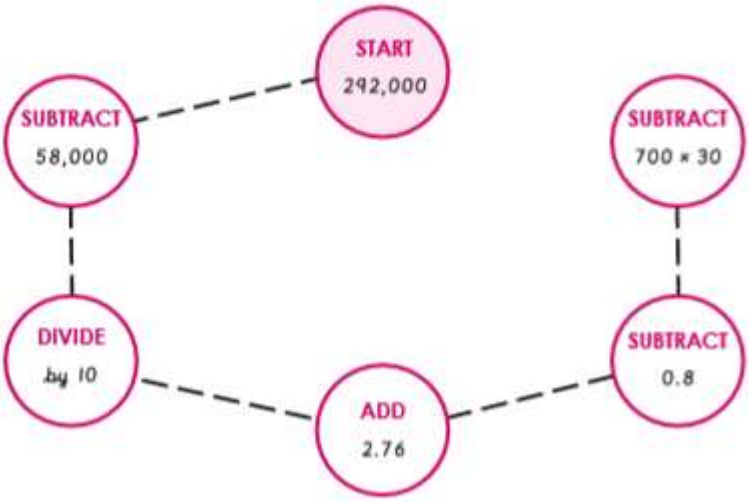
Either:

- complete the mental maths workout questions
  or
- Go onto classroom secrets https://kids.classroomsecrets.co.uk/?s=arithmetic&post_type=page complete one of the tests.





YR6 DEEPENING UNDERSTANDING MENTAL MATHS WORKOUT – SET 1



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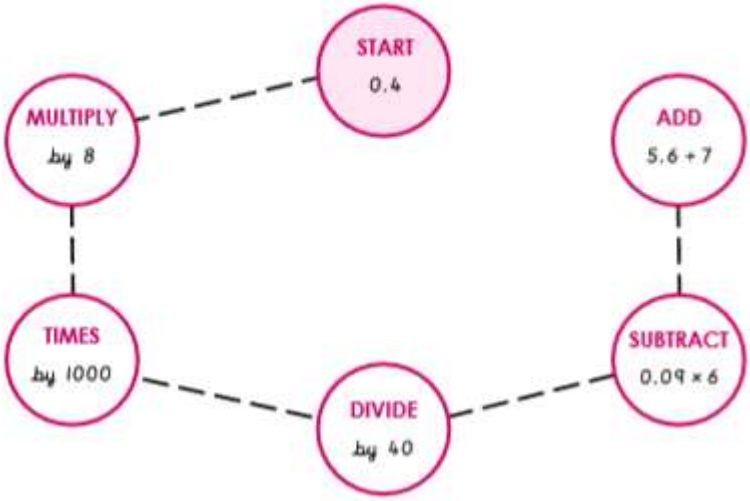
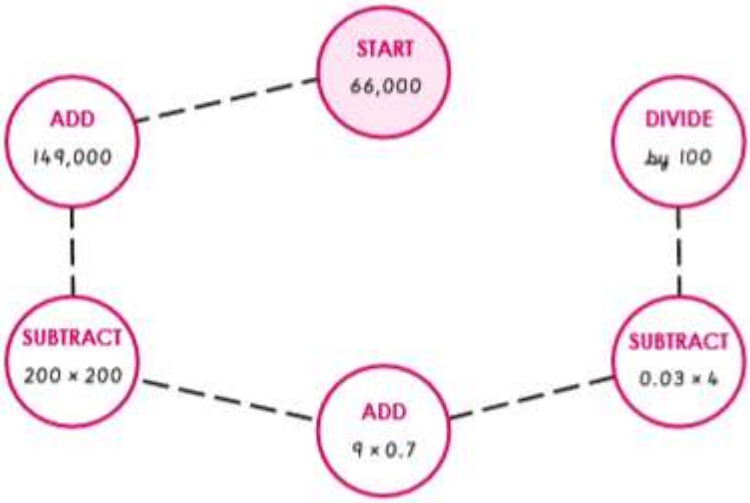


YR6 DEEPENING UNDERSTANDING MENTAL MATHS WORKOUT – SET 1



Session 7: understanding 3 D shapes

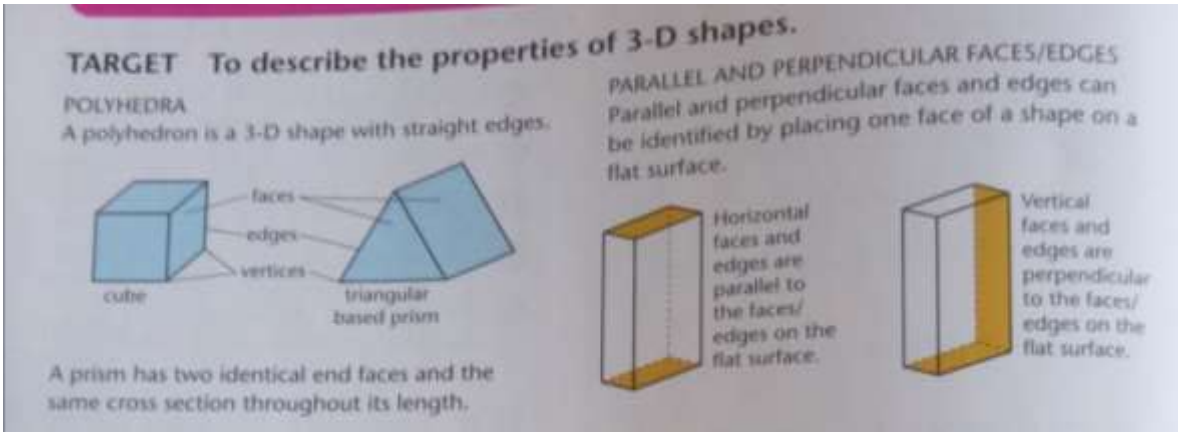
Task: Demonstrate your knowledge of 3D shapes.

You have a choice of activities for this session depending on your knowledge and understanding (and how you like to show your learning).

Either:

- **complete the tasks from the target maths book (see below)**
- **or**
- **Produce a poster showing different 3D shapes and explaining the features of these shapes using key vocabulary – vertices, edges, faces, parallel, perpendicular**

Key information:



TARGET To describe the properties of 3-D shapes.

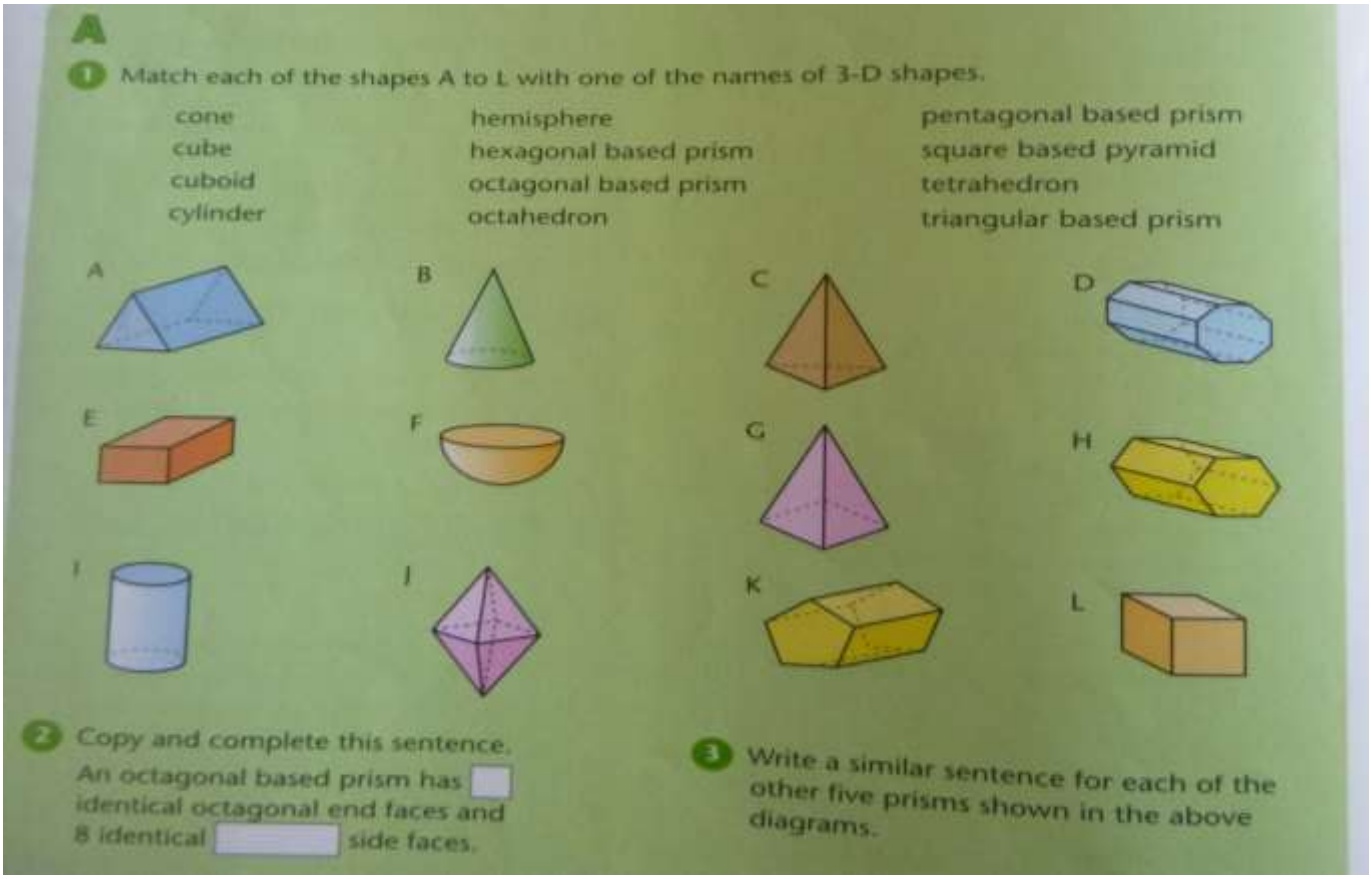
POLYHEDRA

A polyhedron is a 3-D shape with straight edges.

A prism has two identical end faces and the same cross section throughout its length.

PARALLEL AND PERPENDICULAR FACES/EDGES

Parallel and perpendicular faces and edges can be identified by placing one face of a shape on a flat surface.



A

1 Match each of the shapes A to L with one of the names of 3-D shapes.

cone	hemisphere	pentagonal based prism
cube	hexagonal based prism	square based pyramid
cuboid	octagonal based prism	tetrahedron
cylinder	octahedron	triangular based prism

2 Copy and complete this sentence.

An octagonal based prism has ☐ identical octagonal end faces and 8 identical ☐ side faces.

3 Write a similar sentence for each of the other five prisms shown in the above diagrams.

B

1. Copy and complete this table showing the properties of nine different polyhedra.

Shape	Sides	Edges	Vertices
	7		
			4
		24	
cube			
		9	
			6
	8		
			8
		8	

2. For each of the shapes in the above table write down:
   a) how many pairs of parallel faces there are in the shape
   b) how many pairs of perpendicular faces there are in the shape?

C

Copy and complete the following formulae where:

S = number of sides of end face of prism
F = number of faces of a prism
E = number of edges of a prism
V = number of vertices of a prism

1. $F = S + \square$
2. $E = \square S$
3. $V = \square S$
4. $E = F + V - \square$

Use your formulae to find:

5. the number of faces and edges of a prism with 24 vertices
6. the number of vertices and edges of a prism with 12 faces
7. the number of faces and vertices of a prism with 45 edges.

For each of the following shapes write down how many faces have:

a) pairs of parallel edges
b) pairs of perpendicular edges.

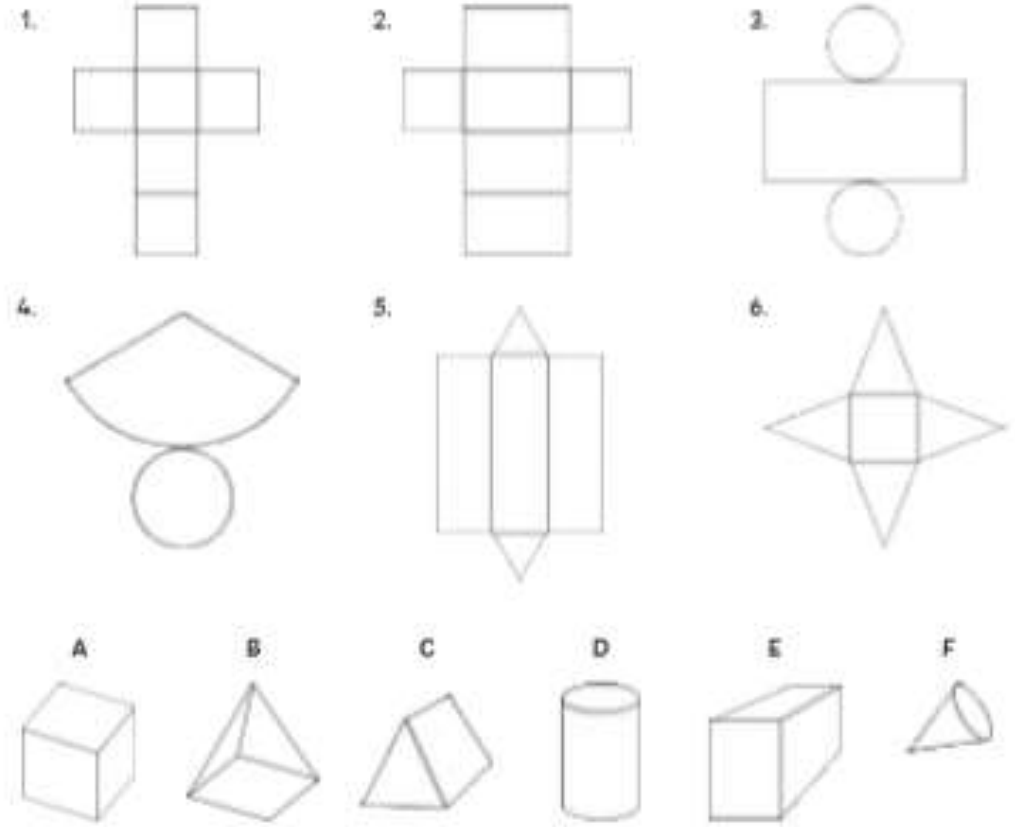
8. a heptagonal prism
9. a hexagonal pyramid
10. a 10 sided (decagonal) prism
11. a pentagonal pyramid
12. a 9 sided (nonagonal) prism
13. an octagonal pyramid

14. Look at the shapes in Section A.
    a) Which shape has parallel edges in the shape but not in any face?
    b) How many pairs of parallel faces does this shape have?
15. How many edges are there on the end face of a prism with:
    a) 20 faces with parallel edges
    b) 20 faces with perpendicular edges.

Session 8: understanding nets

Match the Nets

Can you match the correct net with the 3D shape?



Net	Shape

Task: complete the table to show what shape each of these nets would make if you folded them up.

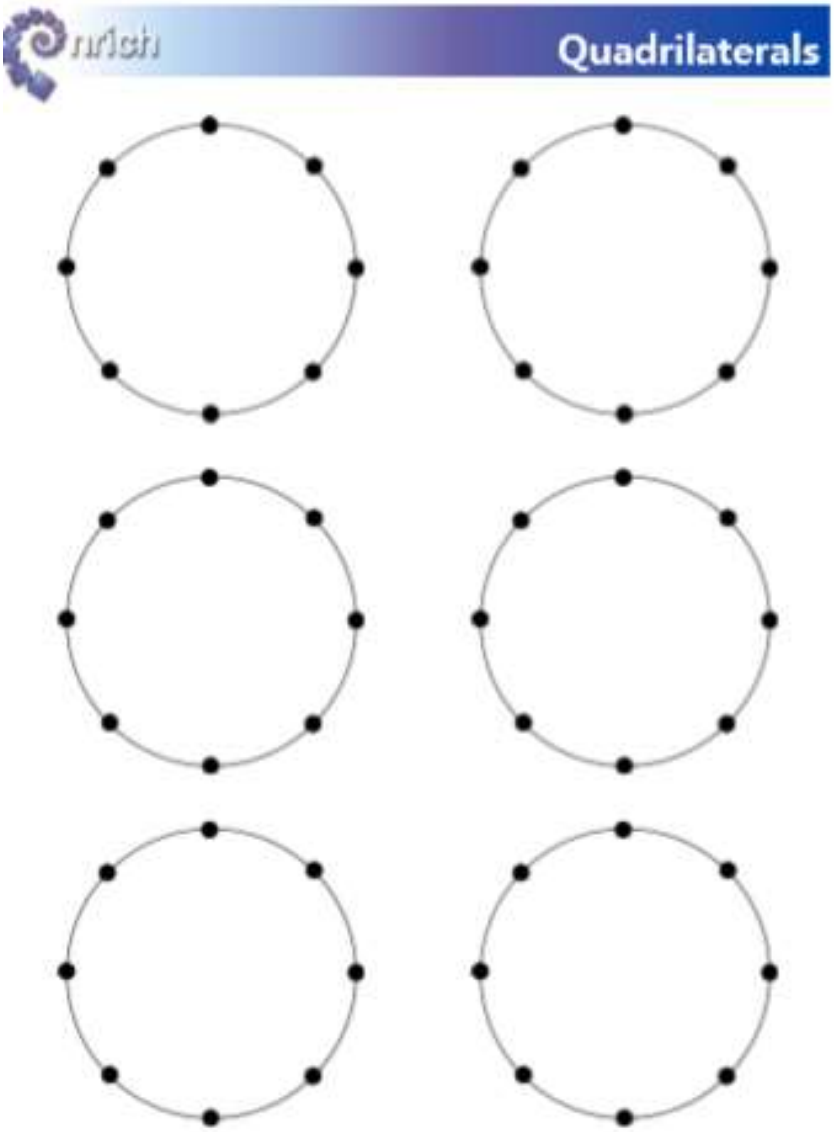
Extension: can you produce a different net that would make the same shape? For example a different net to make a cuboid or triangular prism.

Session 9: applying knowledge

The shape has two pairs of parallel sides.	The area of the shape is $24cm^2$.
The shape has four right angles.	The shape's perimeter is numerically larger than its area.
The length of each side is an even number.	The shape is irregular.
The shape is a quadrilateral.	The shape has two lines of symmetry.

Task: Can you draw at least 1 shape for each of these descriptions?

Session 10 – investigation



Task:

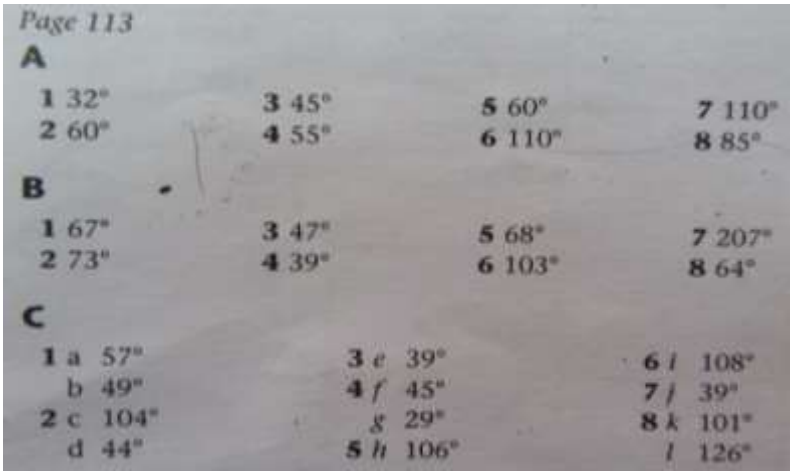
Quadrilaterals are shapes that have 4 straight sides. Consider a circle with eight evenly-spaced dots round it. How many **different** quadrilaterals can be made by joining the dots on the circle? Can you work out the angles of all your quadrilaterals?

Extension work:

- Try the geometry problem solving cards
- Complete the shape assessment questions
- Continue with the online work – classroom secrets, diagnostic questions, prodigy.

Answers:

Session 3



Page 113

A

1 32°	**3** 45°	**5** 60°	**7** 110°
2 60°	**4** 55°	**6** 110°	**8** 85°

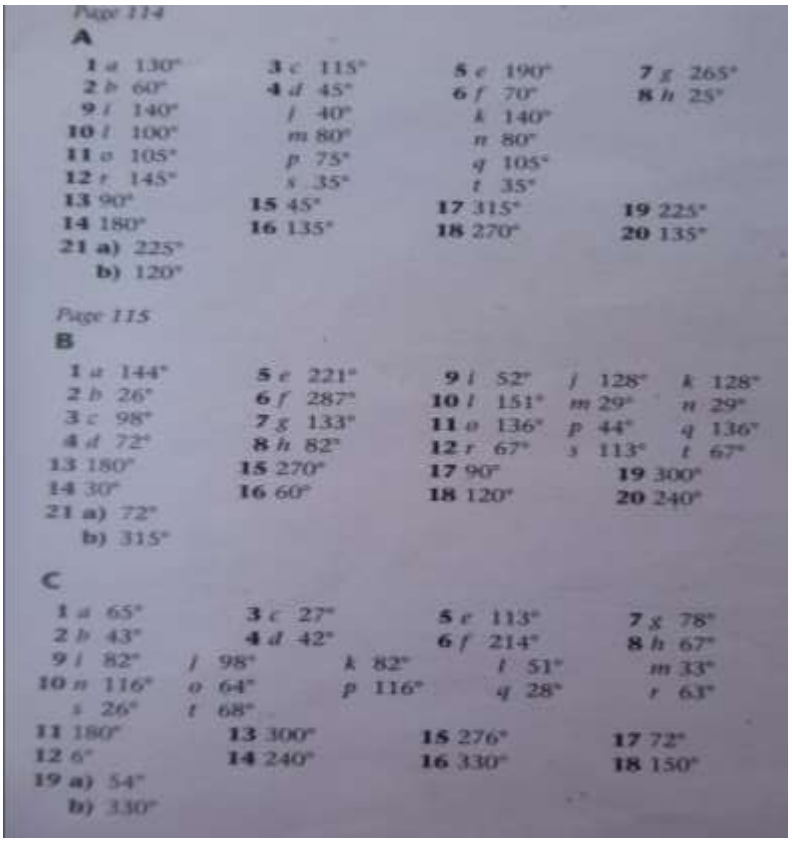
B

1 67°	**3** 47°	**5** 68°	**7** 207°
2 73°	**4** 39°	**6** 103°	**8** 64°

C

1 a 57°	**3** *e* 39°	**6** *i* 108°
b 49°	**4** *f* 45°	**7** *j* 39°
2 c 104°	*g* 29°	**8** *k* 101°
d 44°	**5** *h* 106°	*l* 126°

Session 4



Page 114

A

1 *a* 130°	**3** *c* 115°	**5** *e* 190°	**7** *g* 265°
2 *b* 60°	**4** *d* 45°	**6** *f* 70°	**8** *h* 25°
9 *i* 140°	*j* 40°	*k* 140°	
10 *l* 100°	*m* 80°	*n* 80°	
11 *o* 105°	*p* 75°	*q* 105°	
12 *r* 145°	*s* 35°	*t* 35°	
13 90°	**15** 45°	**17** 315°	**19** 225°
14 180°	**16** 135°	**18** 270°	**20** 135°
21 a) 225°			
b) 120°			

Page 115

B

1 *a* 144°	**5** *e* 221°	**9** *i* 52°	*j* 128°	*k* 128°
2 *b* 26°	**6** *f* 287°	**10** *l* 151°	*m* 29°	*n* 29°
3 *c* 98°	**7** *g* 133°	**11** *o* 136°	*p* 44°	*q* 136°
4 *d* 72°	**8** *h* 82°	**12** *r* 67°	*s* 113°	*t* 67°
13 180°	**15** 270°	**17** 90°	**19** 300°	
14 30°	**16** 60°	**18** 120°	**20** 240°	
21 a) 72°				
b) 315°				

C

1 *a* 65°	**3** *c* 27°	**5** *e* 113°	**7** *g* 78°	
2 *b* 43°	**4** *d* 42°	**6** *f* 214°	**8** *h* 67°	
9 *i* 82°	*j* 98°	*k* 82°	*l* 51°	*m* 33°
10 *n* 116°	*o* 64°	*p* 116°	*q* 28°	*r* 63°
s 26°	*t* 68°			
11 180°	**13** 300°	**15** 276°	**17** 72°	
12 6°	**14** 240°	**16** 330°	**18** 150°	
19 a) 54°				
b) 330°				

Session 6

Step	Sheet 1	Sheet 2	Sheet 3	Sheet 4	Sheet 5
1	146,000	4.5	292,000	0.4	66,000
2	173,000	27	234,000	3.2	215,000
3	1730	27,000	23,400	3,200	175,000
4	1736.06	3,000	23,402.76	80	175,006.3
5	1737.76	1,200	23,401.96	79.46	175,006.18
6	937.76	6,100	2,401.96	80.26	1,750.0618

Session 7

1 A triangular prism
B cone
C tetrahedron
D octagonal prism
E cuboid
F hemisphere
G square based pyramid
H hexagonal prism
I cylinder
J octahedron
K pentagonal prism
L cube

2 An octagonal based prism has 2...8 identical rectangular side faces.

3 A triangular prism has 2 identical triangular end faces and 3 identical rectangular side faces.
A cuboid has 2 identical rectangular end faces and 4 identical rectangular side faces.
An hexagonal prism has 2 identical hexagonal end faces and 6 identical rectangular side faces.
A pentagonal prism has 2 identical pentagonal end faces and 5 identical rectangular side faces.
A cube has 2 identical square end faces and 4 identical square side faces.

B

1

Shapes	Faces	Edges	Vertices
pentagonal prism	7	15	10
tetrahedron	4	6	4
octagonal prism	10	24	16
cube	6	12	8
triangular prism	5	9	6
octahedron	8	12	6
hexagonal prism	8	18	12
cuboid	6	12	8
square based pyramid	5	8	5

2

pentagonal prism	**a)** 1	**b)** 10
tetrahedron	**a)** 0	**b)** 0
octagonal prism	**a)** 5	**b)** 16
cube	**a)** 3	**b)** 12
triangular prism	**a)** 1	**b)** 6
pentagonal based pyramid	**a)** 0	**b)** 0
octahedron	**a)** 4	**b)** 8
cuboid	**a)** 3	**b)** 12
square based pyramid	**a)** 0	**b)** 4

C

1 $F = S + 2$
2 $E = 3S$
3 $V = 2S$
4 $E = F + V - 2$

5 Faces 14 Edges 36
6 Vertices 20 Edges 30
7 Faces 17 Vertices 30

8 a) 7	**b)** 7	**12 a)** 9	**b)** 9
9 a) 1	**b)** 0	**13 a)** 1	**b)** 0
10 a) 12	**b)** 10	**14 a)** octahedron	**b)** 4
11 a) 0	**b)** 0	**15 a)** 18	**b)** 20