## Year 6

## Academic Year: 2019-2020

| Year 1 | Year 2 |  | Year 3 | Year 4 | Year 5 |  | Year 6 |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 |
|  | Number: Place Value |  | Number: Addition, Subtraction, Multiplication and Division |  |  |  | Number: Fractions |  |  |  |  | $\circ$ <br> $\stackrel{0}{0}$ <br> 0 <br> 0 <br> 0 <br> 0 <br> 0 |
| 든 | Number: Decimals |  | Number: Percentages |  | Number: <br> Algebra |  |  | Measu Perim Area Vol | ment: eter, and me | Numb | : Ratio |  |
|  | Geometry: Properties of Shape |  | Problem Solving |  |  | Statistics |  | Investigations |  |  |  |  |

## Summer 2020

## Monday 8th June 2020 - Friday 17th July 2020

## Summer II 2020

## Learning Content for Weekly Planning

## Overview



Draw 2-D shapes using given dimensions and angles.

Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals and regular polygons.

Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.

## Week 1: 08.06.20-12.06.20

Week 2: 15.06.20-19.06.20
Week 3: 22.06.20-06.05.20

## Summer 2 (Week 2): 15.06.20-19.06.20

Monday 15th June 2020 (15.06.20)
LO: to know that angles that are opposite to each other are always equivalent in size.

Tuesday 16th June 2020 (16.06.20)
LO: to understand that the sum of interior angles within a triangle

Wednesday 17th June 2020 (17.06.20) - SCHOOL CLOSED.

Thursday 18th June 2020 (18.06.20)
LO: to use the properties of triangles to reason about angles.

Friday 19th June 2020 (19.06.20)
LO: to use my knowledge of angle rules and sum to solve and reason missing angles.

### 15.06 .20

LO: to know that angles that are opposite to each other are always equivalent in size.

Starter Tasks:<br>- 'green pen' task<br>- arithmetic practice

## Success Criteria

- To know that angles opposite to each other are equal.
- To calculate missing angles using the knowledge above


## Vocabulary

- protractor
- angles
- measurement
- degrees
- straight line
- acute, reflex, obtuse
- right angle
- on a point

Solve the following question.
(hint: where would you place your brackets)

$$
7+7 \div 7+7 \times 7-7=
$$

What answer did you get? Can you get a different answer? Which answer is the correct one?

Explain your reasoning and try to use mathematical knowledge to support your understanding.

## Arithmetic

Stick the following questions into your book and calculate the answer, showing your working out.

Challenge A

Topics include:

- balancing equations
- solving algebraic equations
- measurement
- missing number problems
- calculating time intervals


## Challenge B

Topics include:

- long division
- algebraic substitution
- mixed numbers and improper fractions
- missing number problems
- calculating time intervals

How many triangles can you see in the picture?
(hint: be creative!)


Take a piece of paper and fold it in half.

Draw a visible ' $X$ ' - enough so that you can use a protractor to measure the angles you have created.


Take a piece of paper and fold it in half.

Draw a visible ' $X$ ' - enough so that you can use a protractor to measure the angles you have created.

Mark each of the angles that your ' $X$ '
 (hint: the point where two lines meet)

What shape do they make altogether?
What does that tell you about the sum of the angles?

Take a piece of paper and fold it in half.

Draw a visible ' $X$ ' - enough so that you can use a protractor to measure the angles you have created.

Mark each of the angles that your ' $X$ '
 (hint: the point where two lines meet)

Measure the size of each angle - make sure that you do it correctly and read from the correct-scale.

What do you notice?
Write it down.

Take a piece of paper and fold it in half.

Draw a visible ' $X$ ' - enough so that you can use a protractor to measure the angles you have created.

Mark each of the angles that your ' $X$ '
 (hint: the point where two lines meet)

Measure the size of each angle - make sure that you do it correctly and read from the correct-scale.

What do you notice?

## Have another go

Draw a visible ' $X$ ' - this time make it of a different size.

Mark the four different angles using different colours.

Measure each one and write down what you notice.

Do all of the angles add up to $360^{\circ}$ ? Are any of the angles the same?

Is this always the case? Investigate other examples

Angles that are opposite to each other are ALWAYS the same.


QUES: What do you notice about the angles (1 and 2) on the straight line $A B$ ?

## Angles that are opposite to each other are ALWAYS the same.



It's a straight line so $x+y=180^{\circ}$

$$
98^{\circ}+82^{\circ}=180^{\circ}
$$

Find the size of the missing angles.


## Independent Learning:

1. Complete questions on calculating missing angles.
2. Complete 'green' questions.
3. Complete 'light blue' questions
4. Complete 'dark blue' questions.

Always show your 'greater depth' potential

- give explanations that make sense.
- use diagrams to prove or disprove.
- show your working out.


## How can we solve this question?

What mathematical knowledge could we use to help us?


Whitney says that it's not possible to calculate all of the missing angles.

Do you agree? Explain why.
Is it possible to calculate ANY of the missing angles?
Do you agree?
How could you prove/disprove Whitney?

## How can we solve this question?

What key information do we need from the question?
The diagram below is drawn using three straight lines.


Amir says that angle $g$ is equal to $30^{\circ}$ because vertically opposite angles are equal.

Do you agree? Explain your answer.
What mathematical knowledge can we use in our explanation?

How can we solve this question?
What key information do we need from the question?
Can you spot any 'angle rules'?


What mathematical knowledge can we use in our explanation?

### 16.06 .20

LO: to understand that the sum of interior angles within a triangle

## Starter Tasks:

- 'green pen' task
- arithmetic practice


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## Maths Brain Teaser

| 7 | 42 | 35 |
| :---: | :---: | :---: |
| 56 | $?$ | 21 |
| 28 | 49 | 14 |

What is the value of the missing number?
Explain your reasoning.

## Arithmetic

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## Challenge B

Topics include:

- long division
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Take a piece of card and cut out the shape of an equilateral triangle (remember what that is, folks!)

Locate the angles and draw the appropriate symbol
Use a protractor to measure the size of each angle and find the total sum.

What do you notice?
Cut the corners off and arrange them angles into a straight line.

Repeat the same steps for an isosceles triangle and a scalene triangle.

What do you notice about the sum of the angles?
Can you arrange the corners to create a straight line? What do you notice?

If you were to create an isosceles/scalene triangle with differently-sized angles, would it be the same?

Angles in a triangle (no matter what triangle) add up to 180


Try it:draw any-sized triangle and add up the interior angles.

## Independent Task



Calculate the missing angle(s) in each equation.
What type of triangle the missing angle could be from? Remember to explain your reasoning.

## Independent Task



Calculate the missing angle(s) in each equation.

Use your knowledge of triangles to identify what each triangle is - remember to explain how you know.

How can we solve this question?
What mathematical knowledge could we use to help us?

Have a look at Amir's statement.
Amir says,


My triangle has two $90^{\circ}$ angles.

Is Amir correct?
Use an example to prove or disprove.
How can you prove that Amir is correct or incorrect?

How can we solve this question?
What mathematical knowledge could we use to help us?
Have a look at Eva's statement.

Eva says, | My triangle is a |
| :--- |
| scalene triangle. One |
| angle is obtuse. One |
| of the angles |
| measures $56^{\circ}$ |
| The obtuse angle is |
| three times the |
| smallest angle. |

Work out the size of each angle in Eva's triangle
Remember to show your working out.
Would drawing out the triangle help at all?

How can you check that your answer is right?

## Plenary



What is the minimum amount of known angles do you think you need to be able to work the rest?

How many angles do you need to know before you are able to work out the missing ones?

### 18.06 .20

LO: to use properties of triangles to reason about angles.

## Starter Tasks: <br> - 'green pen' task <br> - arithmetic practice

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## Maths Brain Teaser

## Can you Solve this?



## Sbare if you could solve it!!!

What is the value of the missing number?
Explain your reasoning.

## Arithmetic

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Topics include:

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Recap...


What is the minimum amount of known angles do you think you need to be able to work the rest?

How many angles do you need to know before you are able to work out the missing ones?

How many angles do you think you need?


How many angles do you need to know before you are able to work out the missing ones?

Could you work out the missing angle if you have two given angles?

Could you work out the missing angles if you have one given angle?


Use the following properties and match it to the correct triangle.


## Questions

What type of triangle is?
How do you know?
What will the size of each angle? Can it be anything else?


## Questions

Identify the angles that are identical in these shapes.
How many of them are identical? How do you know?

Use your knowledge of angles to identify the missing angles.


Remember to explain your REASONING for each question (What knowledge did you use to help you?)

How can we solve this question?
What mathematical knowledge could we use to help us?

I have an isosceles triangle.
One of the angle measures 42 degrees.


What could the other angles measure?
Remember to show your working out and explain your reasoning.

Is there only one angle that can be 42 degrees?

How can you check that your answer is right?

How can we solve this question?
What mathematical knowledge could we use to help us?
Have a look at the following statements:
Alex
My angles are $70^{\circ}, 70^{\circ}$ and $40^{\circ}$

My angles are $45^{\circ}, 45^{\circ}$ and $90^{\circ}$
Mo
©
Eva
My angles are $60^{\circ}, 60^{\circ}$ and $60^{\circ}$

What type of triangle is each person describing? Remember to explain your reasoning.

How can we use our knowledge of triangles to help us?

How can you check that your answer is right?

How do we know that the number sentence below is correct?

Look at the diagram below


$$
40^{\circ}+a+d=180^{\circ}
$$

Is the above number sentence correct? Explain your reasoning.
How many number sentences can you write to show the relationship between the angles in the triangle?

What else can we write down?

How can we use our knowledge of triangles to help us?

### 19.06 .20

LO: to use my knowledge of angle rules and sum to solve and reason missing angles.

## Starter Tasks:

- 'green pen' task
- arithmetic practice


## Success Criteria

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## Maths Brain Teaser



What is the value of the missing number?
Explain your reasoning.

## Arithmetic

Stick the following questions into your book and calculate the answer, showing your working out.

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## Challenge B

Topics include:

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## Recap

Match the following properties to the correct triangle
(hint: some properties can be linked to more than one triangle)


## Recap

What are the different rules of angle sums?
Draw an example to show each rule.

What mathematical knowledge can you see/apply in this picture?


What kind of triangle is it? How do you know? What does this mean?

## What mathematical knowledge can you see/apply in this

 picture?

Isosceles triangles = two angles are the same.

How has that helped us towards calculating angle ' $x$ '?

## What mathematical knowledge can you see/apply in this picture?



Angles in a triangle add up to 180

$$
\begin{aligned}
& 56+56=112 \\
& 180-112=68
\end{aligned}
$$

## What mathematical knowledge can you see/apply in this

 picture?

How can we know find the value of ' $x$ '?
What knowledge can we use to help us?

## What mathematical knowledge can you see/apply in this

 picture?

How can we know find the value of ' $x$ '?
Angles around a point/in a circle add up to 360
$360-68=292$

What mathematical knowledge can you see/apply in this picture?


Have a go at working out what angle ' $y$ ' is.

Remember to show each step of your solution.

## What mathematical knowledge can you see/apply in this

 picture? line add up to 180.Find out which other rules can be applied to so that we know the value of $A, B$ and $C$


Angle $A=$ To find angle $A$, you must use your knowledge that angles on a straight line add up to 180. This will give you the angle marked '?'. Then, you can apply the same rule to find angle ' $A$ '

Continue to explain your way through the problem, identifying the knowledge needed to calculate the missing angles


## TASK

Solve the following questions, remembering to note down the rules/knowledge that you applied

## $104^{\circ}$

## $28^{\circ}$

$f^{\circ}$


## TASK

Solve the following questions, remembering to note down the rules/knowledge that you applied


## TASK

Solve the following questions, remembering to note down the rules/knowledge that you applied



