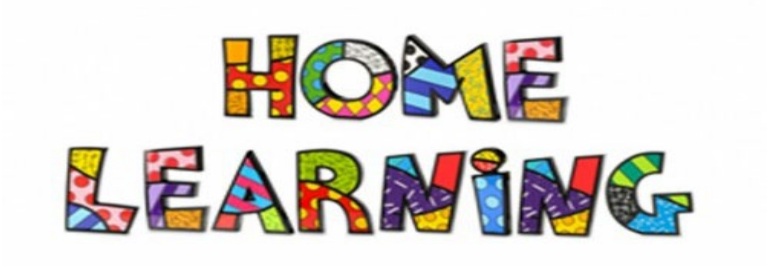

Year 10 Home Learning 13

Focus for this week: Entry Level: Choosing appropriate measurements and measuring instruments

GCSE: Special sequences

Essential learning:	• Select a possible length, capacity or weight for a given item
Practising:	• Choose an appropriate measuring instrument
Learning about:	• Recognise linear and geometric sequences
Extension:	• Recognise Fibonacci sequences

Contents:

Worksheet 1 Select a possible length, capacity or weight for a given item
Worksheet 2 Choose an appropriate measuring instrument
Worksheet 3 Sequences from patterrns
Worksheet 4 Recognise linear and geometric sequences
Worksheet 5 Recognise Fibonacci sequences

Tasks:

- Look at the learning objectives, reflect on what you are already confident with, what you would like to practise and what you would like to learn this week
- Choose 2-3 worksheets to complete this week and email them to Mr. Croft or Mrs. Coleman
- Login to MyMaths and complete MyMaths tasks
- Spend 10 minutes a day on Times Table Rock Stars; Numbots OR Sumdog
- Please email a photo of any worksheets or poster you complete to the email address below.
  This will earn you a golden token.

Additional activities:

- Roll a dice and record the number. Decide on a term to term rule and write the next 4 terms. For example- I roll a 4. 4, 6, 8, 10 Term to term rule is add 2.
- Research Fibonacci sequences that can be found in nature;
- Draw your own shape patterns and think about whether they show linear sequences, geometric sequences or something else

If you have queries about this work, please contact me at jcoleman@bower-grove.kent.sch.uk

Worksheet 1 Select a possible length, capacity or weight for a given item

Circle the correct measure for each item.

1	A small bag of crisps	30 g	or	3 kg
2	The length of a finger	9 mm	or	9 cm
3	The amount of water in a full bucket	5 litres	or	5 cl
4	The length of a tennis court	90 cm	or	24 m
5	The capacity of a table spoon	15 ml	or	75 cl
6	The distance from Manchester to Bolton	85 m	or	25 km
7	The weight of an egg	65 g	or	6 kg
8	The weight of a mobile phone	100 g	or	1 kg
9	The thickness of a coin	2 mm	or	20 cm
10	The screen width of a tablet	25 mm	or	15 cm

Email completed worksheets to me at jcoleman@bower-grove.kent.sch.uk . Each good attempt earns a golden token.

Worksheet 2 Choose an appropriate measuring instrument

Task 1: Investigate measuring instruments you have around your house. Decide what they measure and when you use them to measure something. Examples could include: clocks; thermometers; scales; pressure gauges (on boilers); tape measures…

Task 2: Complete the task below

Circle the item you would use to measure each of the following

1	The length of a tennis court.	ruler	/	Trundle wheel
2	The length of a room.	Tape measure	/	Ruler
3	The weight of an apple.	Kitchen scales	/	Measuring jug
4	The capacity of a cup.	Kitchen scales	/	Measuring jug
5	The width of a finger nail.	Ruler	/	Tape Measure
6	The weight of a child.	Bathroom scales	/	Ruler
7	The length of a table.	Trundle wheel	/	Tape Measure
8	The capacity of a pan.	Measuring jug	/	Kitchen scales

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Worksheet 3 Sequences from patterns

1. Here is a pattern of squares

Pattern 1 Pattern 2 Pattern 3

a) Draw pattern 4
b) How many squares will there be in pattern number 13?
c) Which pattern has 27 squares?

2. Here is a pattern of dots

Pattern 1 Pattern 2 Pattern 3

a) Draw pattern 4
b) How many dots will there be in pattern 15?
c) Jack says there are 70 dots in pattern 20. Is he right? You must explain your answer.

3. Here is a made from bricks

Pattern 1 Pattern 2 Pattern 3

a) Draw pattern 4
b) How many bricks will there be in pattern number 8?
c) Which pattern will have 49 bricks?
d) How many bricks will there be in pattern n?

4. Here is a made from white and grey tiles.

Pattern 1 Pattern 2 Pattern 3

a) Draw pattern 4
b) How many white tiles will there be in pattern number 10?
c) How many grey tiles will there be in pattern 8?
d) Miles has 49 grey tiles and 32 white tiles. Which pattern can he make?
e) Emma has 90 grey tiles and 42 white tiles. She says she can make pattern number 10. She is incorrect, explain why.
f) How many more grey and white tiles will Emma need to make pattern number 10.

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Worksheet 4 Recognise linear and geometric sequences

Task 1 Linear sequences.

A sequence is a linear sequence if the term-to-term rule involves adding or subtracting the same number. For example:

1, 3, 5, 7, 9, 11 is a linear sequence because the term to term rule is +2
95, 85, 75, 65, 55, 45 is a linear sequence because the term to term rule is -10
5, 10, 15, 20, 25 is a linear sequence because the term to term rule is +5
3, 6, 12, 24, 48 is **NOT** a linear sequence because the term to term rule is x2
0, 1, 0, 2, 0, 3 is NOT a linear sequence because there is not a consistent term to term rule

In the table below complete three different examples of linear sequences (and their term to term rules) and three examples of sequences that are NOT linear sequences.

Linear Sequence e.g. 3, 7, 11, 15 (+4)	**NOT a Linear Sequence** e.g. 80, 40, 20, 10 (÷2)

Task 2 Geometric Sequences

A sequence is a geometric sequence if the term to term rule involves multiplying or dividing the same number. For example:

3, 6, 12, 24, 48 is a geometric sequence because the term to term rule is x2
4, 12, 36, 108 is a geometric sequence because the term to term rule is x3
125, 25, 5, 1, 0.2 is a geometric sequence because the term to term rule is ÷5
-100, 50, -25, 12.5 is a geometric sequence because the term to term rule is ÷(-2)

Find the term to term rule and then write the next three terms of the following geometric sequences

a) Term to term rule:_____ 4, 8, 16, 32, ... , ... , ...

b) Term to term rule:_____ 4, 20, 100, 500, ... , ... , ...

c) Term to term rule:_____ 40, 20, 10, 5 , ... , ... , ...

d) Term to term rule:_____ 4, 32, 256, 2048, ... , ... , ...

e) Term to term rule:_____ 400, 40, 4, 0.4, 0.04, ... , ... , ...

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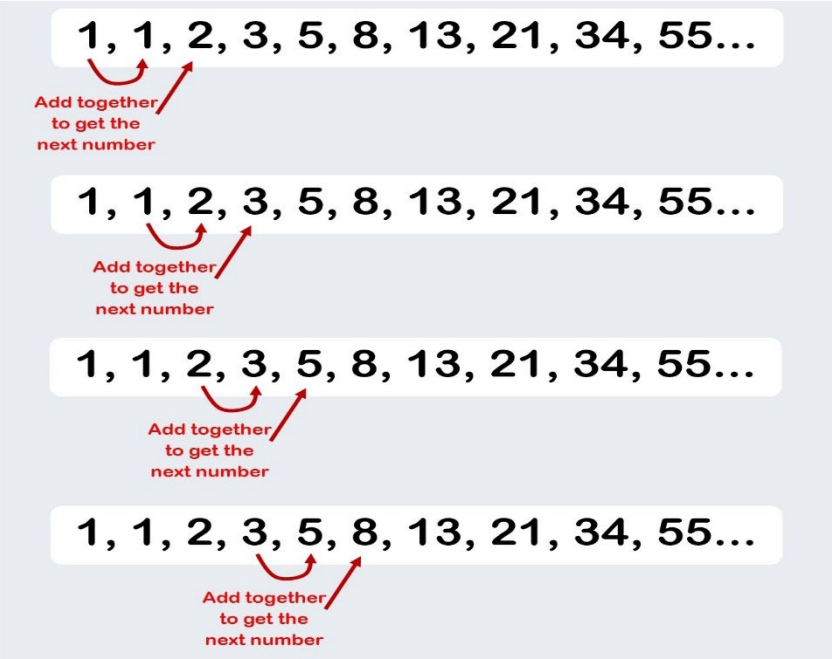
Worksheet 5 Recognise Fibonacci sequences



Fibonacci sequences

Fibonacci was a 13th century Italian Mathematician who is best remembered for a special type of sequence he investigated:

eg	1	1	2	3	5	8	13	...
eg	2	5	7	12	19	31	50	...

Find the next term by adding the previous two

Find the next four terms for these Fibonacci sequences:

a)	3, 4,		d)	3, -4,	
b)	4, 3,		e)	-3, -4,	
c)	-4, 3,		f)	6, 8,	

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