

## Week 5

### This week in a nutshell:

This week sees a mixture of topics from Year 7 as well as topics seen more recently. Note that, in question 1 we are avoiding confusion with upper and lower bounds by adding the requirement that the numbers are integers. This is something you may want to discuss now, or leave to a date in the future depending on the students.

**Question 1:** Understanding rounding

**Question 2:** Index notation

**Question 3:** Identifying arithmetic sequences

**Question 4:** Generating sequences

**Question 5:** Enlargements

The questions aim to develop and deepen understanding over the week. Due to the necessity of the topics covered this week, there is an emphasis on the interchangeability of command words, and language flexibility. It may be worth taking some extra time this week to make sure your students are developing their mathematical literacy.

### This week's ideas for class discussion include:

Question 1: **Understanding rounding**

- Why might upper and lower bounds for rounding differ if we are not just working with integers?
- Is it necessary to know what number(s) we could have had before rounding?

Question 2: **Index notation**

- Why is it useful to write expressions in index form?

Question 3: **Identifying arithmetic sequences**

- What is the common difference?
- How do sequences look if they have a common ratio, rather than a common difference?

Question 4: **Generating sequences**

- In what ways could we create/generate a sequence of numbers?

Question 5: **Enlargements**

- \*promote reflections on skills built last year\*

## Week 5: Day 1

- 1) An integer rounded to the nearest ten is 140. What is the smallest the integer could be?

- 2) Rewrite this product using index notation:

$$5 \times 5 \times 5 =$$

- 3 Explain why this sequence is arithmetic:

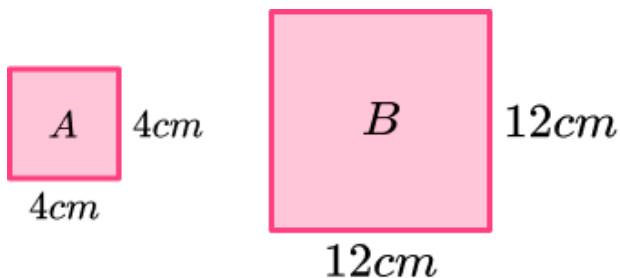
3, 10, 17, 24, 31, ...

- 4) Generate the first five terms of the sequence with,

1<sup>st</sup> term: 7

Term to term rule : add 4

- 5) Determine the scale factor of enlargement from square A to square B.



## Week 5: Day 1 Answers

- 1) An integer rounded to the nearest ten is 140. What is the smallest the integer could be?

135

- 2) Rewrite this product using index notation:

$$5 \times 5 \times 5 = 5^3$$

- 3 Explain why this sequence is arithmetic:

3, 10, 17, 24, 31, ... Constant difference of +7

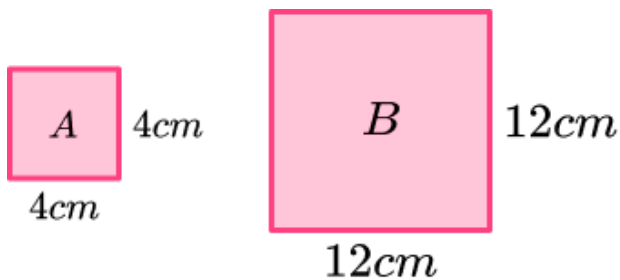
- 4) Generate the first five terms of the sequence with,

1<sup>st</sup> term: 7

Term to term rule : add 4

7, 11, 15, 19, 23

- 5) Determine the scale factor of enlargement from square A to square B.



Scale Factor = 3

## Week 5: Day 2

- 1) An integer rounded to the nearest ten is 60. What is the largest the integer could be?

- 2) Rewrite this product using index notation:

$$n \times n \times n \times n \times n =$$

- 3 Explain why this sequence is arithmetic:

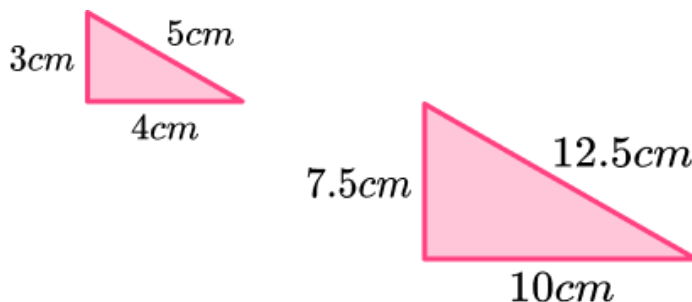
27, 21, 15, 9, 3, ...

- 4) Generate the first five terms of the sequence with,

1<sup>st</sup> term: 41

Term to term rule : subtract 8

- 5) Determine the scale factor of enlargement from the smaller triangle to larger triangle.



## Week 5: Day 2 Answers

- 1) An integer rounded to the nearest ten is 60. What is the largest the integer could be?

64

- 2) Rewrite this product using index notation:

$$n \times n \times n \times n \times n = n^5$$

- 3 Explain why this sequence is arithmetic:

27, 21, 15, 9, 3, ... Constant difference of -6

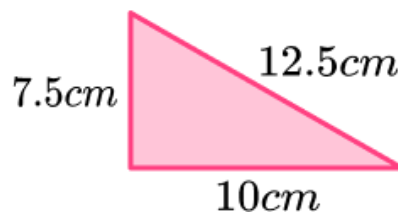
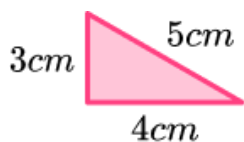
- 4) Generate the first five terms of the sequence with,

1<sup>st</sup> term: 41

Term to term rule : subtract 8

41, 33, 25, 17, 9

- 5) Determine the scale factor of enlargement from the smaller triangle to larger triangle.



Scale Factor = 2.5

## Week 5: Day 3

- 1) An integer rounded to the nearest hundred is 800. What is the largest the integer could be?

- 2) Rewrite this product using index notation:

$$7 \times a \times 7 \times a =$$

- 3) Explain why this sequence is not arithmetic:

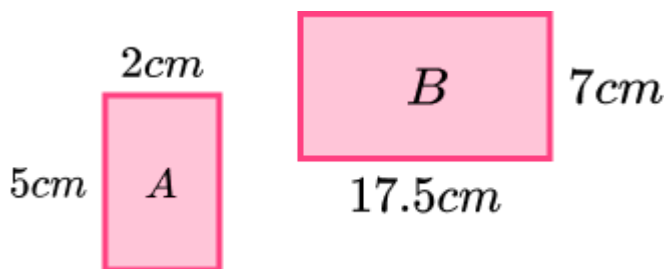
2, 4, 8, 16, 32, ...

- 4) Generate the first five terms of the sequence with,

2<sup>nd</sup> term: 6

Term to term rule : add 7

- 5) Determine the scale factor of enlargement from rectangle A to rectangle B



## Week 5: Day 3 Answers

- 1) An integer rounded to the nearest hundred is 800. What is the largest the integer could be?

849

- 2) Rewrite this product using index notation:

$$7 \times a \times 7 \times a = 7^2 a^2 \text{ or } 49a^2$$

- 3) Explain why this sequence is not arithmetic:

2, 4, 8, 16, 32, ... Difference between terms not constant

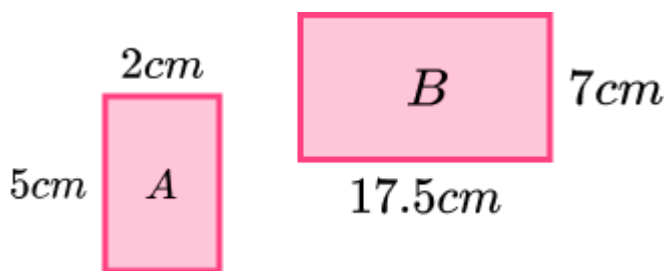
- 4) Generate the first five terms of the sequence with,

2<sup>nd</sup> term: 6

Term to term rule : add 7

-1, 6, 13, 20, 27

- 5) Determine the scale factor of enlargement from rectangle A to rectangle B



Scale Factor = 3.5

## Week 5: Day 4

- 1) An integer rounded to the nearest thousand is 27000. What is the largest the integer could be?

- 2) Rewrite this product using index notation:

$$(a \times a \times a)^2 =$$

- 3) Explain why this sequence is arithmetic:

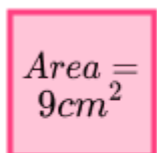
0.125, 0.25, 0.375, 0.5, ...

- 4) Generate the first five terms of the sequence with,

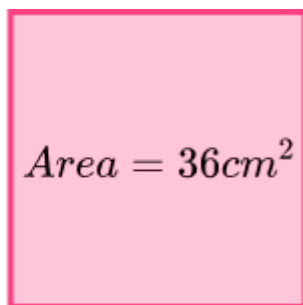
4<sup>th</sup> term: 19

Term to term rule : subtract 3

- 5) Determine the linear scale factor of enlargement from A to B.



Shape A



Shape B



## Week 5: Day 4 Answers

- 1) An integer rounded to the nearest thousand is 27000. What is the largest the integer could be?

27499

- 2) Rewrite this product using index notation:

$$(a \times a \times a)^2 = a^6$$

- 3) Explain why this sequence is arithmetic:

0.125, 0.25, 0.375, 0.5, ... Constant difference of 0.125

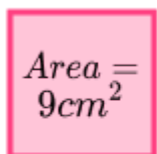
- 4) Generate the first five terms of the sequence with,

4<sup>th</sup> term: 19

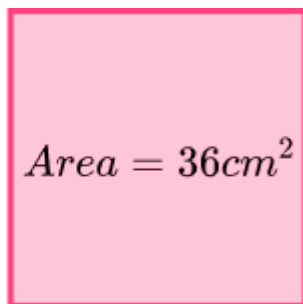
Term to term rule : subtract 3

28, 25, 22, 19, 16

- 5) Determine the linear scale factor of enlargement from A to B.



Shape A



Shape B

Scale Factor = 2

## Week 5: Day 5

- 1) An integer rounded to the nearest hundred is 1200. What is the smallest the integer could be?

- 2) Rewrite using index notation:

$$5 + 5 + 5 + 5 + 5 =$$

- 3) Explain why this sequence is not arithmetic:

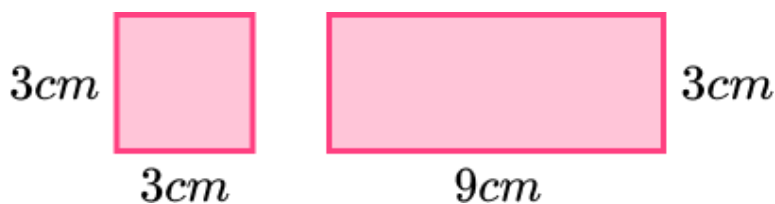
1, 0, 1, 0, 1, ...

- 4) Generate the first five terms of the sequence with,

1<sup>st</sup> term: 64

Term to term rule : halving

- 5) Why does this diagram not represent an enlargement?



## Week 5: Day 5 Answers

- 1) An integer rounded to the nearest hundred is 1200. What is the smallest the integer could be?

1150

- 2) Rewrite using index notation:

$$5 + 5 + 5 + 5 + 5 = 5^2$$

- 3) Explain why this sequence is not arithmetic:

1, 0, 1, 0, 1, ... No constant difference between terms

- 4) Generate the first five terms of the sequence with,

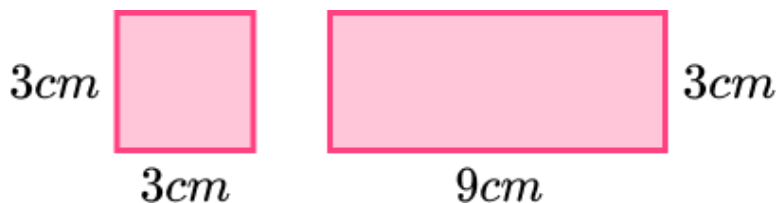
1<sup>st</sup> term: 64

Term to term rule : halving

64, 32, 16, 8, 4

- 5) Why does this diagram not represent an enlargement?

The scale factor for length inconsistent with the scale factor for width



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