# Year 6 to Year 7

# Maths Transition

# 6 Week Challenge!

Please complete as many of the following problems as you can looking at different areas of Maths using skills your have learnt at Primary School. Feel free to use additional paper to present your solutions and to ask for help if you are unsure how to begin.

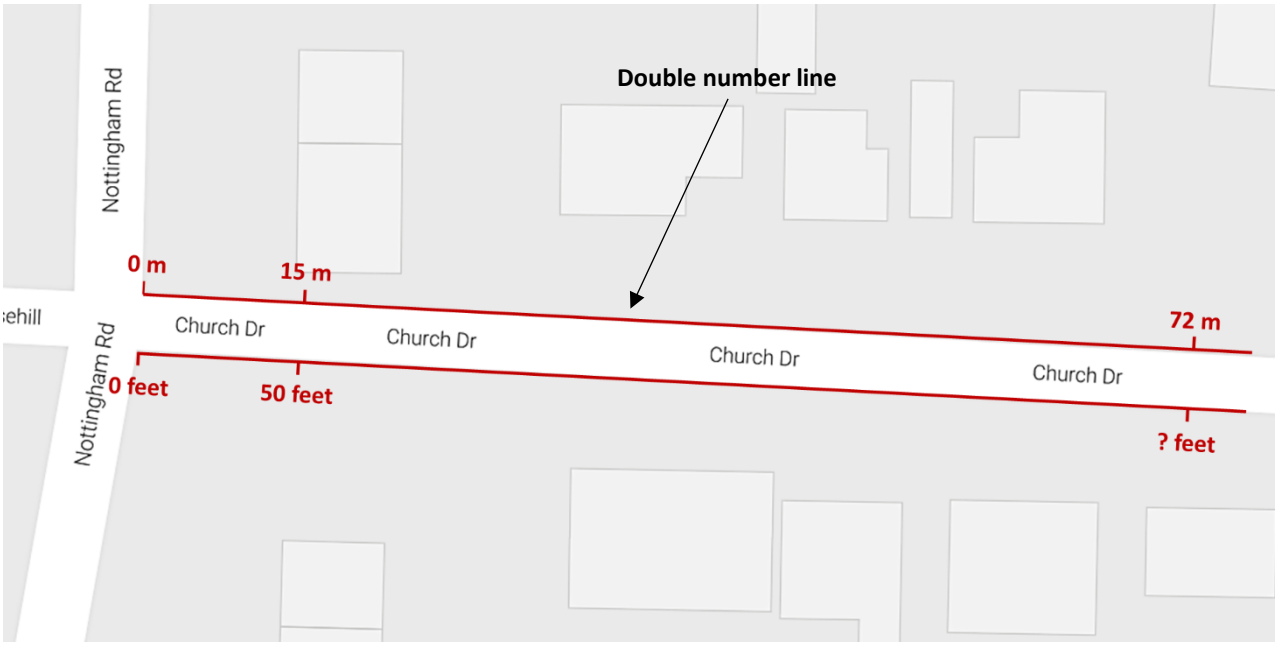
Good luck and we look forward to seeing you in September!

Name: _____

# PROBLEM 1 Converting Distances

The picture below shows a section of a street map for a street in Keyworth.

A *double number line* has been drawn on top of the street map to show distances along Church Drive in both feet and metres.




1. Use the double number line to work out how many feet are equivalent to 72 m.

   Show the method you use on the double number line.

2. Find a different method for working out how many feet are equivalent to 72 m and use this method to check that the answer you got with the first method is correct.

# PROBLEM 2 Which is Bigger?

Look at the following expression: A. $17 \times 45$

Adding 1 to one of the numbers will give expression B or C:

B. $18 \times 45$ C. $17 \times 46$

Which expression is bigger, B or C?

Find as many ways as you can find to show and prove your answer.

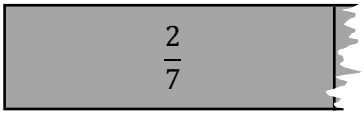
1. Rachel sees the offers below. She tells her friend that this means that if she buys both items she will receive 75% off in total.

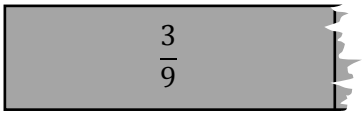
   Is she correct?

$\frac{1}{2}$ OFF

$\frac{1}{4}$ OFF

2. The fraction bars have been ripped. Using the given information, identify which whole bar is longer.
   Explain your reasoning.

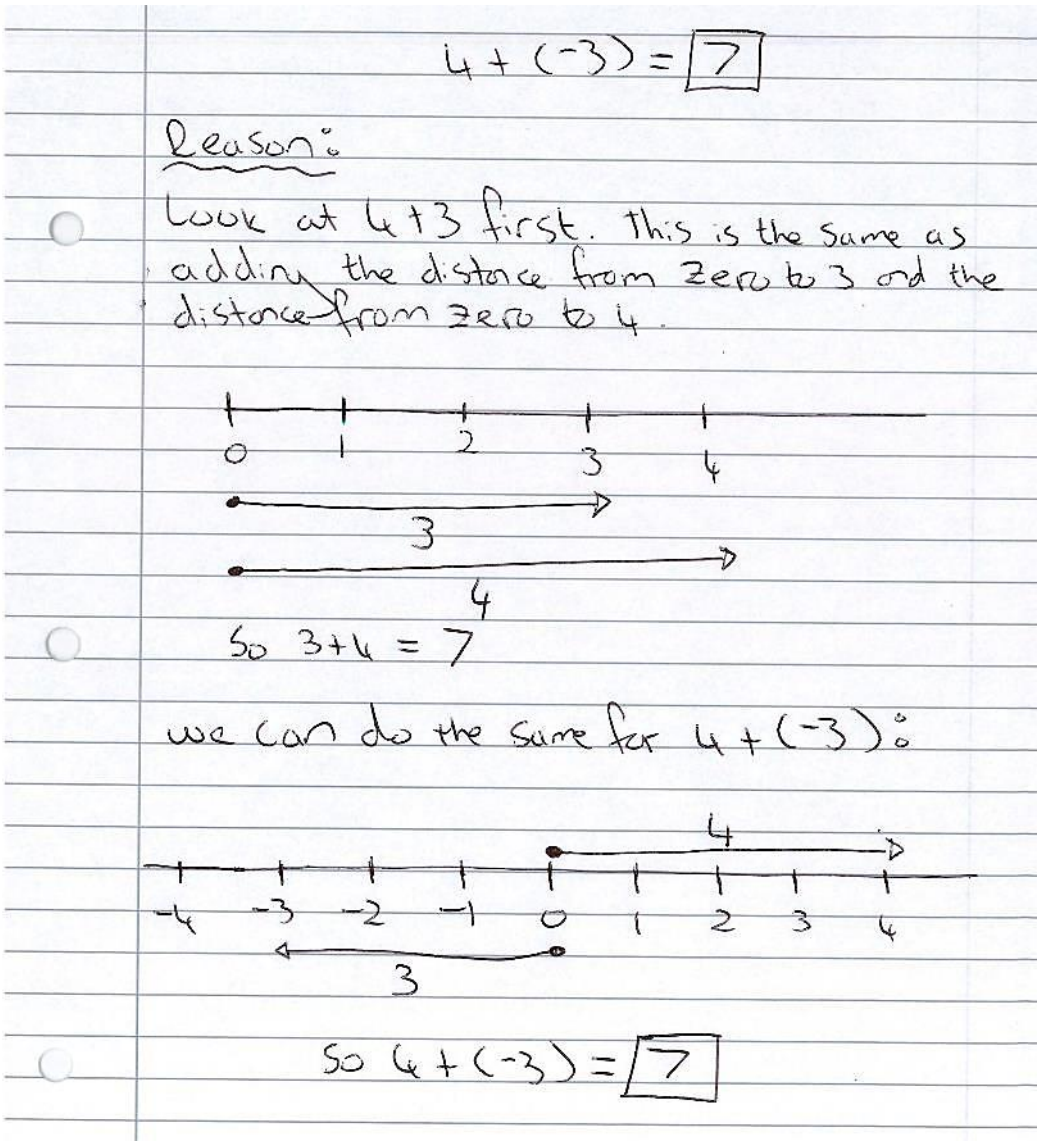


# PROBLEM 4 Negative Numbers

1. Izzy is given the following problem to work out: **4 + (-3)**

   Here is her solution and explanation:

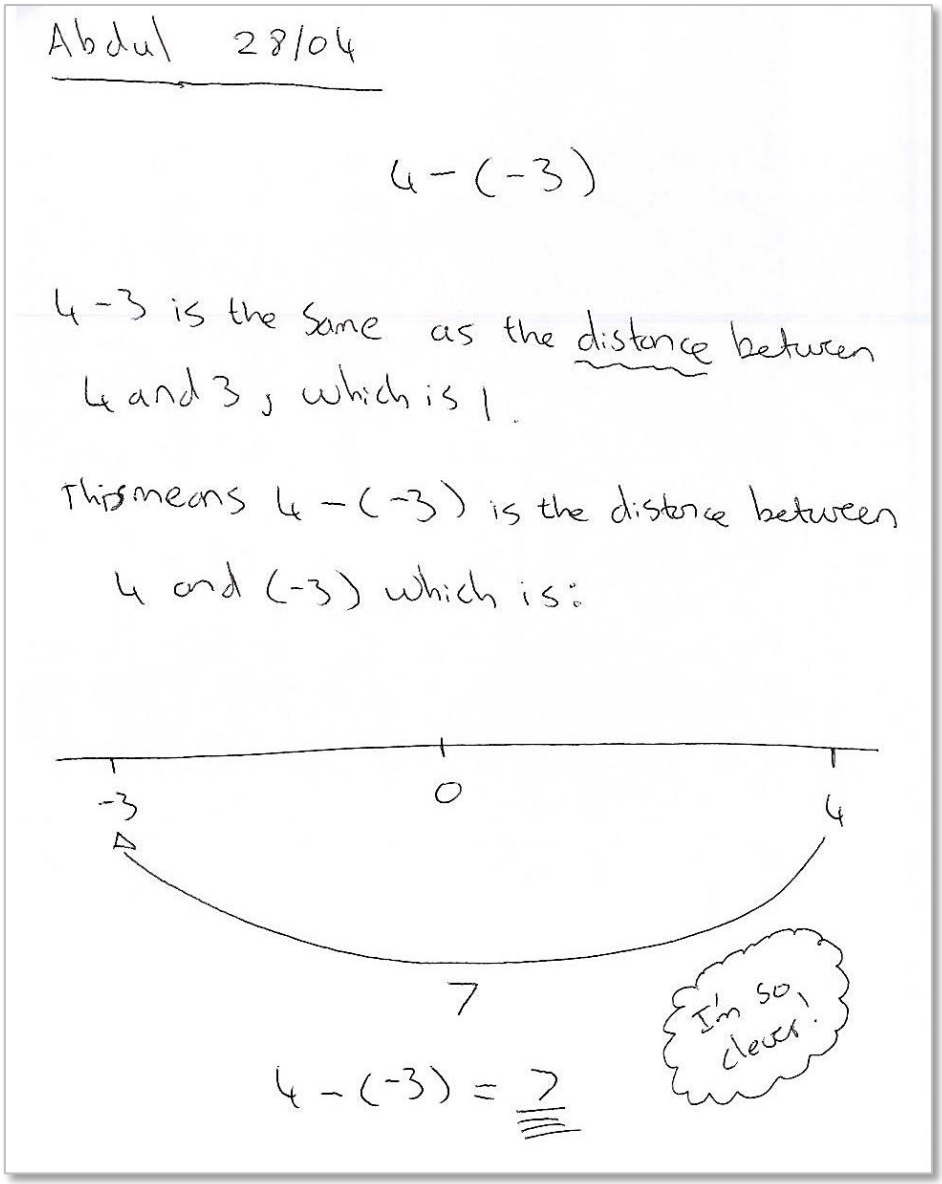



Do you think Izzy is correct?

If not, explain why, give the correct answer and show this correct answer on a number line.

2. Abdul is given a different problem to work out: **4 – (-3)**

Here is his solution and explanation:




a. Use this method to work out the answers to the following:

i. 3 – (-4)

ii. 4 – (-2)

iii. 8 – (-5)

iv. 17 – (-6)

b. Abdul asks his teacher what the answer to the question **-4 – (-3)** will be. She tells him the answer is **-1**.

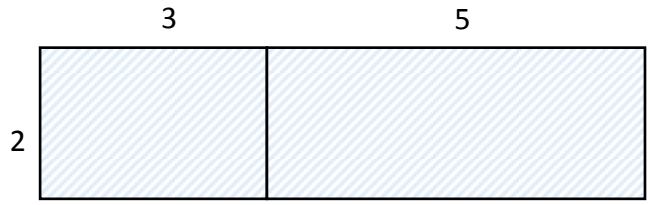
i. Does Abdul's method work for this calculation? Explain.

ii. What is different about this problem compared to the problem 4 – (-3)?

iii. What advice do you think the teacher should give to Abdul about when his method works and when it does not work?

# PROBLEM 5 Areas

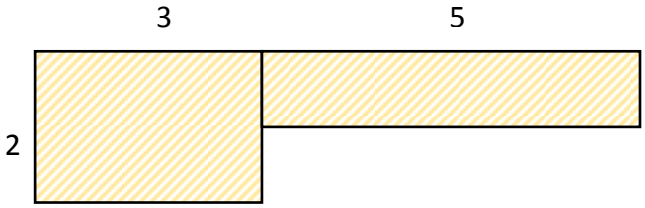
A picture of a shape is given below. Let's call this **SHAPE A**.




1. Tick **all** of the number sentences that describe the area of SHAPE A:

| ☐ | ☐ | ☐ | ☐ | ☐ |
|---|---|---|---|---|
| (a) $2 \times 3 + 5$ | (b) $2 + 3 + 5 + 2 + 5 + 3$ | (c) $10 + 3 \times 2$ | (d) $3 + 5 \times 2$ | (e) $2 \times (3 + 5)$ |

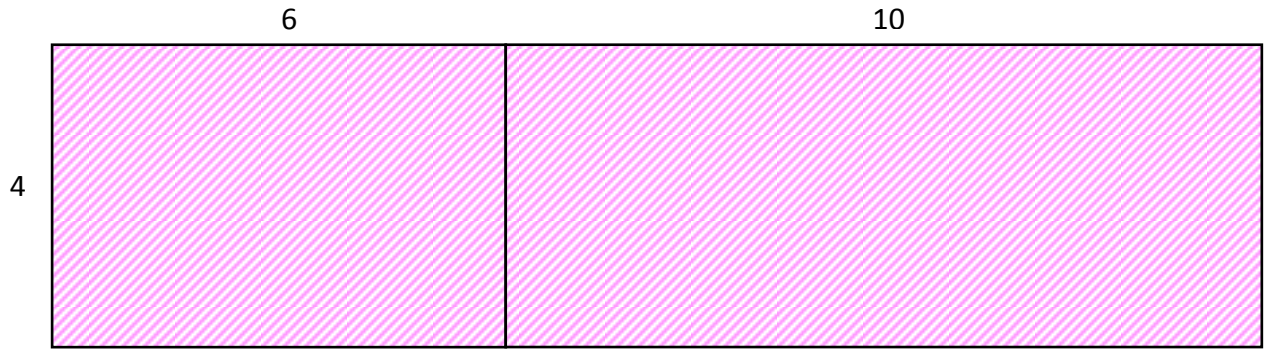
2. Nick says that the first number sentence in the table will describe the area of the following shape:




Is Nick correct? Explain how you know.

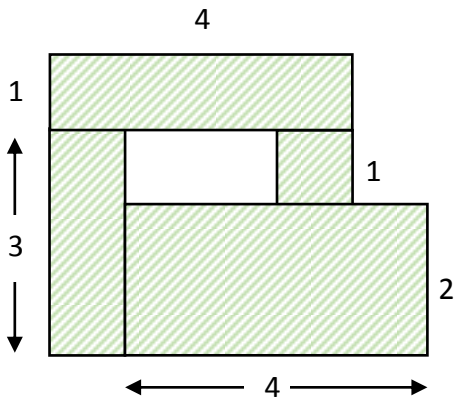
3. Draw pictures to show why $3 + 5 \times 2$ is not equal to $5 + 3 \times 2$.

4. Shaheed claims that the area of the shape below will be double the area of SHAPE A because the dimensions have all been doubled. Is Shaheed correct? Explain how you know.




5. The following shape has the same area as SHAPE A.

How is it possible that two shapes that look so different can have the same area?




If the shapes have the same area this means that the two shapes should fit perfectly on top of each other.
Show how the pieces of this shape can be rearranged to cover SHAPE A perfectly.

# PROBLEM 6 2D & 3D Visualisation

Tim is packing boxes into the back of a truck.

The truck has the following dimensions:

- Width = 245 cm
- Height = 250 cm
- Length = 890 cm

The boxes are all the same size and have dimensions:

- Width = 50 cm
- Height = 60 cm
- Length = 80 cm

The boxes can be arranged in any way in the back of the truck.



You need to give Tim instructions on how he must pack the boxes into the back of the truck so that he can fit the *maximum* number of boxes.

Your instructions need to include:

- a description of the number of boxes that Tim will need to fit in
- a picture show how Tim must arrange the boxes to make sure that he can fit in as many as possible.