

Step-by-Step 1

Lesson 2.1, Question 4

You will need red and yellow coloured pencils or markers.

Step 1 Choose an integer between -9 and $+6$. _____

Colour in the fewest tiles needed to model this integer.

Yellow										
Red										

Step 2 Draw another model of the same integer, using some zero pairs.

Yellow												
Red												

Step 3 Repeat *Step 2*, three more times, making a different model each time.

Yellow												
Red												

Yellow												
Red												

Yellow												
Red												

Step 4 How many more ways could you find? Explain.

Step 5 What patterns do you see in the tables above?

Step 6 Choose an integer between -90 and $+60$.

How do patterns help you model this integer?

Step-by-Step 2**Lesson 2.2, Question 9**

You will need red and yellow coloured tiles and coloured pencils or markers.

Step 1 Use coloured tiles to model $(+3) + (-7)$. Sketch the tiles you used.

What is $(+3) + (-7)$? _____

Step 2 Use coloured tiles to model $(-7) + (+3)$. Sketch the tiles you used.

What is $(-7) + (+3)$? _____

Step 3 How are the sums in *Steps 1* and *2* related? Use your sketches to help you explain.

Step 4 Use coloured tiles to model $(-3) + (+7)$. Sketch the tiles you used.

What is $(-3) + (+7)$? _____

Step 5 How are the statements and sums in *Steps 1* and *4* related? Explain.

Step 6 Repeat *Steps 1* to *4* with two integers of your choice. What do you notice?

Lesson 2.3, Question 9

You will need a copy of *Number Lines* (Master 2.15). Use the lines labelled -10 to $+10$.

Step 1 Mark two opposite integers on a number line.
Write an addition equation for these two integers. _____
Show this sum on the number line.
Why is the sum of two opposite integers zero?

Step 2 Choose two positive integers from a number line. _____
Write an addition equation for these two integers. _____
Show this sum on the number line.
Why is the sum of two positive integers always positive?

Step 3 Choose two negative integers from a number line. _____
Write an addition equation for these two integers. _____
Show this sum on the number line.
Why is the sum of two negative integers always negative?

Step 4 Choose two integers with different signs from a number line.
Do *not* choose opposite integers. _____
Write an addition equation for these two integers. _____
Show this sum on the number line.
Explain why the sum has the sign it does.

Step 5 Write the opposites of the integers you added in *Step 4*. _____
Write an addition equation for these two integers. _____
Show this sum on the number line.
Explain why the sum has the sign it does.

Step-by-Step 4

Lesson 2.4, Question 9

You will need coloured tiles.

Step 1 Subtract: $(+3) - (+1) = \underline{\hspace{2cm}}$
 $(+4) - (+2) = \underline{\hspace{2cm}}$
 $(+5) - (+3) = \underline{\hspace{2cm}}$

What patterns do you see in the subtraction equations?

Continue the pattern to write 3 more subtraction equations.

Step 2 Subtract: $(-5) - (-2) = \underline{\hspace{2cm}}$
 $(-6) - (-3) = \underline{\hspace{2cm}}$
 $(-7) - (-4) = \underline{\hspace{2cm}}$

What patterns do you see in the subtraction equations?

Continue the pattern to write 3 more subtraction equations.

Step 3 Subtract: $(-2) - (-7) = \underline{\hspace{2cm}}$
 $(-3) - (-8) = \underline{\hspace{2cm}}$
 $(-4) - (-9) = \underline{\hspace{2cm}}$

What patterns do you see in the subtraction equations?

Continue the pattern to write 3 more subtraction equations.

Step 4 Subtract: $(-1) - (+5) = \underline{\hspace{2cm}}$
 $(-2) - (+4) = \underline{\hspace{2cm}}$
 $(-3) - (+3) = \underline{\hspace{2cm}}$

What patterns do you see in the subtraction equations?

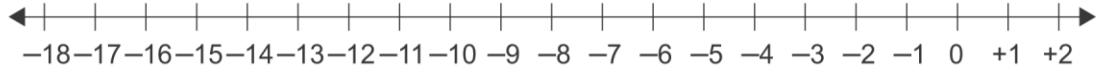
Continue the pattern to write 3 more subtraction equations.

Step 5 In *Steps 1 to 4*, how many more equations could you have written each time? Explain.

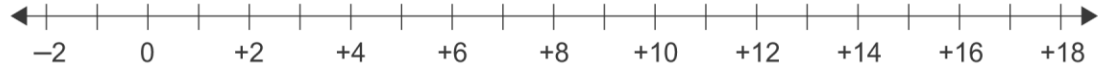
Step-by-Step 5

Lesson 2.5, Question 8

Step 1 Use the number line below to subtract: $(-6) - (+11) = \underline{\hspace{2cm}}$



Step 2 Use the number line below to subtract: $(+11) - (-6) = \underline{\hspace{2cm}}$



Step 3 Look at the subtraction statements in *Steps 1* and *2*.

How are the statements alike?

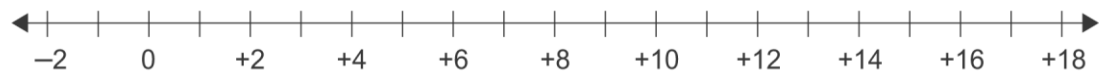
How are the statements different?

Look at the answers in *Steps 1* and *2*.

How are the answers alike? Explain.

How are the answers different? Explain.

Step 4 Use the number line below to subtract: $(+6) - (-11) = \underline{\hspace{2cm}}$



Step 5 Look at the subtraction statements in *Steps 1* and *4*.

How are the statements alike?

How are the statements different?

Look at the answers in *Steps 1* and *4*.

How are the answers alike? Explain.

How are the answers different? Explain.
