

Blast activity D3: *Add and subtract with integers***Preparation:****Complete Journal problem 3 before beginning this activity**

It would be useful to revise using number lines with positive integers only. You will need basic coloured pencils or pens.


Teaching Tips:

- Discuss the 'Initial thinking questions' above as a group. It is very important to keep a close eye on these discussions, so it might be useful to have only one group working through them at a time under close teacher supervision. You need to watch who is coming up with the ideas, and redirect as necessary.
- Once students have the idea, allow them to work in pairs or small groups to complete the questions. You may need to remind them how to use number lines for adding and subtracting.
- Discuss answers as a group so that a common consensus forms. Focus on finding the patterns and creating a common understanding of positive and negative integers.

Follow up and application:

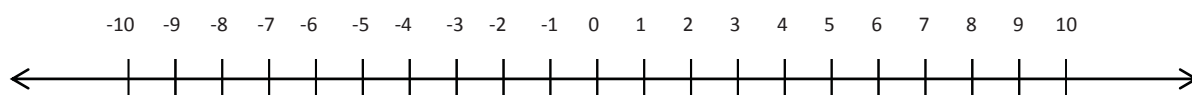
Banking, credit cards, temperatures, positions above and below sea level etc.

D3. Add and subtract with integers

 Positive and negative integers can become complicated when used together. Use what you already know about positive and negative numbers to solve the following problems. Use the number lines to help represent each problem, and make sure that you note the patterns.

Initial thinking questions:

1. If I have a bank account and I spend money, am I adding to or subtracting money from the initial balance? How do you know?
2. My bank account is positive. Am I adding to or subtracting money from the initial balance when I spend money?
3. My bank account is positive. Am I adding to or subtracting money from the initial balance when I deposit money?
4. My bank account is negative. Am I adding to or subtracting money from the initial balance when I spend money?
5. My bank account is negative. Am I adding to or subtracting money from the initial balance when I deposit money?
6. Does my bank balance being negative or positive change whether spending money is adding or subtracting? Explain your answer:
7. Does my bank balance being negative or positive change whether depositing money is adding or subtracting? Explain your answer:



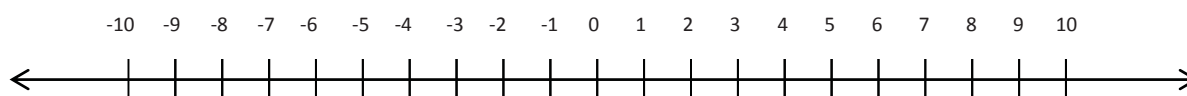
Problem set 1:

A. I start off with a bank balance of +\$8 and then I spend \$2.

1. Draw this on the number line below:
2. Is this an addition or subtraction equation? How do you know?
3. Write the equation:
4. Calculate the answer:

B. I start off with a bank balance of $-\$8$ and then I spend $\$2$.

1. Draw this on the number line below:



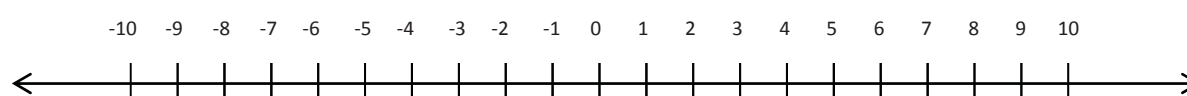
2. Is this an addition or subtraction equation? How do you know?

3. Write the equation:

4. Calculate the answer:

C. I start off with a bank balance of $+\$5$ and then I deposit $\$2$.

1. Draw this on the number line below:



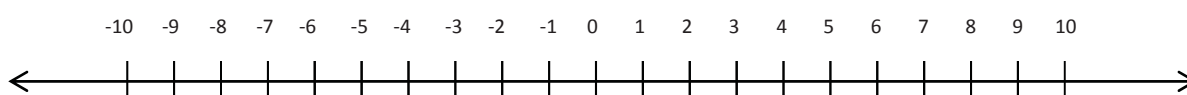
2. Is this an addition or subtraction equation? How do you know?

3. Write the equation:

4. Calculate the answer:

D. I start off with a bank balance of $-\$5$ and then I deposit $\$2$.

1. Draw this on the number line below:



2. Is this an addition or subtraction equation? How do you know?

3. Write the equation:

4. Calculate the answer:

What patterns have I found?

BACKWARDS QUESTION:

If the answer was -5 what could the question have been?

Patterns from problem set 1:

Equation:	Words:	Answer:
A. $+8 - 2$	<u>have</u> \$8 then <u>spend</u> \$2	+6
B. $-8 - 2$	<u>owe</u> \$8 then <u>spend</u> another \$2	-10
C. $+5 + 2$	<u>have</u> \$5 then <u>deposit</u> another \$2	+7
D. $-5 + 2$	<u>owe</u> \$5 then <u>deposit</u> \$2	-3

For the previous questions, the negative signs meant owe or spend and the positive signs meant have or deposit. Complete the question in words and then answer each of the following equations:

Equation:	Words:	Answer:
A. $-4 - 6$	_____ \$4 then _____ \$6	
B. $+4 - 6$	_____ \$4 then _____ \$6	
C. $+3 + 5$	_____ \$3 then _____ \$5	
D. $-3 + 5$	_____ \$3 then _____ \$5	

Summarise the patterns that you have found:

How might you be able to use these patterns?

Try rewriting some of the equations below in terms of temperature instead of money. You may need to use sentences.

$$+15 - 6$$

$$+ 15 + 6$$

$$- 15 - 6$$

$$- 15 + 6$$

What similarities and differences have you found?