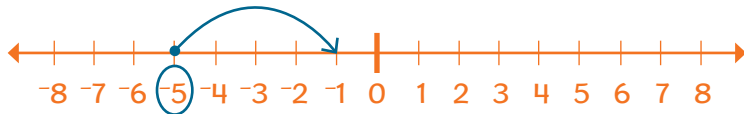


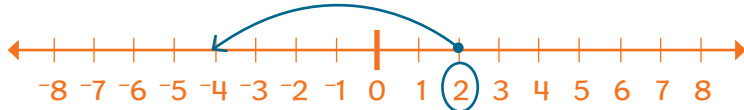
3C: Using a number line to add and subtract integers

1 Show these equations on the number line. Circle the starting number for each equation.

a $-5 + 4 = \underline{\quad}$



b $2 - 6 = \underline{\quad}$



c $-3 + 5 = \underline{\quad}$



d $-1 - 7 = \underline{\quad}$



e $4 - 5 = \underline{\quad}$



f $-8 + 4 = \underline{\quad}$



g $-2 - 5 = \underline{\quad}$



h $-4 + 9 = \underline{\quad}$



2 Decide whether each of these is true (T) or false (F).

a $-3 + 6 = -9$ ☐

b $-5 - 3 = -8$ ☐

c $2 - 7 = 5$ ☐

d $-4 + 3 = -7$ ☐

e $-8 + 8 = 0$ ☐

f $-9 + 4 = -5$ ☐

3 Answer these.

a $-2 + 4 = \underline{\quad}$

b $-3 - 2 = \underline{\quad}$

c $5 - 9 = \underline{\quad}$

d $-4 + 1 = \underline{\quad}$

e $3 - 10 = \underline{\quad}$

f $-2 - 8 = \underline{\quad}$

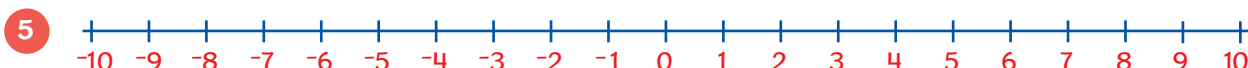
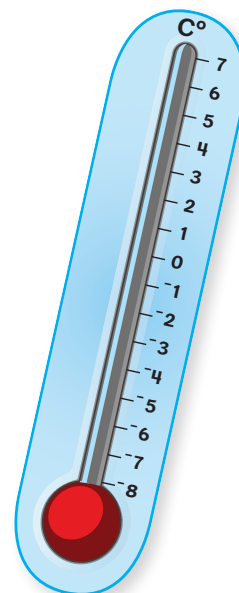
g $6 - 9 + 2 = \underline{\quad}$

h $-6 + 5 - 3 = \underline{\quad}$

i $-8 - 3 - 4 = \underline{\quad}$

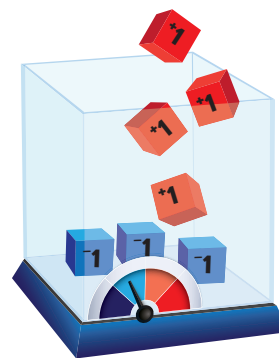


- 4 a The temperature was 6° . It fell 6° . It was then $^{\circ}\text{C}$.
- b The temperature was 3° . It fell 5° . It was then $^{\circ}\text{C}$.
- c The temperature was -2° . It fell 4° . It was then $^{\circ}\text{C}$.
- d The temperature was 1° . It fell 4° , then rose 5° . It was then $^{\circ}\text{C}$.
- e The temperature was -6° . It rose 8° , then fell 2° . It was then $^{\circ}\text{C}$.
- f The temperature in Dunedin was 4° . In Arrowtown it was -3° .
What was the difference between these temperatures?



If you add one hot cube to this water, the temperature goes up.
If you add one cold cube to this water, the temperature goes down.

- a Adding 1 hot makes the water hotter. This is $+1$
- b Adding 1 cold makes the water . This is $+1$
- c Taking away 1 hot makes the water . This is
- d Taking away 1 cold makes the water . This is



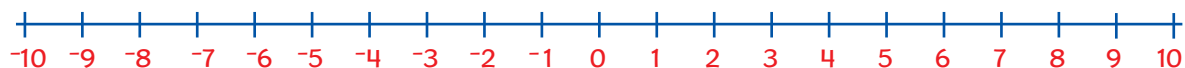
- 6 Complete this temperature table.

	Start temperature	Change	Equation	Simpler equation	Answer
a	2	Add 3 cold	$2 + -3$	$2 - 3$	
b	-3	Add 3 hot	$-3 + +3$		
c	0	Subtract 4 hot			
d	-5	Add 4 cold			
e	1	Subtract 5 cold			
f	-7	Add 6 hot			
g	-3	Subtract 7 hot			
h	-4	Subtract 2 cold			

- 7 Write a simpler equation for each of these.

- a $-2 - -5 =$ $-2 + 5$ b $1 - +8 =$ c $5 + -7 =$
- d $-3 + +4 =$ e $6 - -4 =$ f $-8 - +3 =$

- 8 Use the number line to help answer these.



- a $-3 + -1 =$ b $1 + -4 =$ c $-4 + -5 =$
d $5 - +2 =$ e $8 - -1 =$ f $9 + -2 =$
g $-6 + +4 =$ h $8 - +10 =$ i $-8 - -5 =$
j $6 + -9 =$ k $-7 - -11 =$ l $5 + -12 =$

- 9 Complete these.

- a $-5 +$ $= 0$ b $5 +$ $= 0$ c $8 +$ $= 0$ d $-8 +$ $= 0$

- 10 Four friends play a quiz game where you lose points if you get a question wrong.
These are the points at the end of the game:

Harriet	Zara	Katherine	Louise
-10	7	-7	-2

- a Who won the game?
b What was the difference between Zara's and Katherine's scores?
c How many points did Louise beat Harriet by?

- 11 Here are some number cards:



- a Which two cards add to give the **smallest** possible answer? and .
b Which two cards add to give the **largest** possible answer? and .

- 12 Write an equation, then answer each question.

- a Tamati has $-\$20$. His Koro pays him $\$30$ for mowing lawns.
How much does he have now? $=$
b Elizabeth owes her friend $\$10$.
How much money will she have if she pays back $\$5$? $=$
c Louis owes his mum $\$15$. How much money
will he have if he borrows $\$5$ more, then pays back $\$7$? $=$

Challenge

- 13 Complete these magic squares so that every row, every column and every diagonal adds up to the same number.

a

2		
-1		9
11		6

b

	-6	3
-7	2	-1

c

-8		
	-5	
-4		-2