

2.7

Simplifying addition and subtraction

Calculations involving positive and negative integers can be simplified to simple additions and subtractions. Two signs next to each other can be simplified to just one sign, + or -.

- If the movement on the number line is towards the positive end (right), the calculation is an addition.

$$+2 + +8 = 2 + 8$$

Face positive, walk forward



$$-8 - -3 = -8 + 3$$

Face negative, walk backwards



- If the movement on the number line is towards the negative end (left), the calculation is a subtraction.

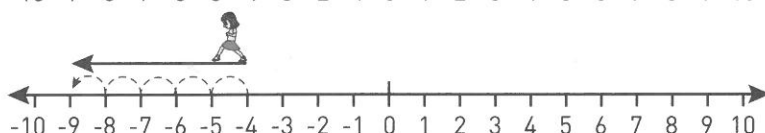
$$6 + -2 = 6 - 2$$

Face positive, walk backwards



$$-4 - +5 = -4 - 5$$

Face negative, walk forward



- 1 Complete the following.

e.g. Write ++ as a +

a Write -- as a

b Write +- as a

c Write -+ as a

- 2 Simplify and then complete the following additions.

a $+4 + +7$

$$= 4 + 7$$

$$= \boxed{}$$

b $+9 + +12$

$$= \underline{\hspace{2cm}}$$

$$= \boxed{}$$

c $-8 + +5$

$$= \underline{\hspace{2cm}}$$

$$= \boxed{}$$

d $-7 + +15$

$$= \underline{\hspace{2cm}}$$

$$= \boxed{}$$

- 3 Simplify and then complete the following additions.

a $+8 + -5$

$$= 8 - 5$$

$$= \boxed{}$$

b $+2 + -9$

$$= \underline{\hspace{2cm}}$$

$$= \boxed{}$$

c $-4 + -11$

$$= \underline{\hspace{2cm}}$$

$$= \boxed{}$$

d $-14 + -7$

$$= \underline{\hspace{2cm}}$$

$$= \boxed{}$$

- 4 Simplify and then complete the following subtractions.

Tip The positive sign can be omitted from a positive integer, so +8 can be written as simply 8.

a $+4 - +2$

$$= 4 - 2$$

$$= \boxed{}$$

b $+9 - +8$

$$= \underline{\hspace{2cm}}$$

$$= \boxed{}$$

c $-6 - +13$

$=$ _____
 $=$

d $-22 - +7$

$=$ _____
 $=$

- 5 Simplify and then calculate the following subtractions.

a $+8 - -7$

\downarrow
 $= 8 + 7$
 $=$

b $+3 - -14$

$=$ _____
 $=$

c $-9 - -4$

$=$ _____
 $=$

d $-5 - -16$

$=$ _____
 $=$

- 6 Write the calculations with a single sign between the numbers.

Tip If the signs are the same, write as a +; if the signs are different, write as a -.

- a $5 + -9$ is the same as _____.
 b $-3 - -6$ is the same as _____.
 c $12 - +10$ is the same as _____.
 d $-14 + +3$ is the same as _____.

- 7 State whether the number sentences below are true (T) or false (F) by circling the correct answer. It may help to perform the calculation on the number line.

Tip Simplify the calculations before using the number line. The answer that is further to the right is larger.



a $+5 + +7 = +5 - -7$

$=$ _____
 $=$ _____

T or F

b $-3 + -8 = +3 - -8$

$=$ _____
 $=$ _____

T or F

c $-4 + -10 < -4 - -10$

$<$ _____
 $<$ _____

T or F

d $+5 - +9 > -5 + +9$

$>$ _____
 $>$ _____

T or F

- 8 a $+3 - +5 - -7$ simplifies to:

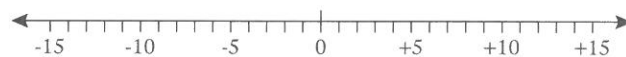
A $3 - 5 - 7$

B $3 - 5 + 7$

C $3 + 5 - 7$

D $3 + 5 + 7$

- b $+3 - +5 - -7$ is equal to:



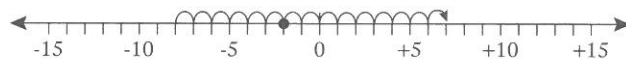
A -15

B -9

C $+1$

D $+5$

- 9 A number line has been used to calculate the answer to a question.



What might the question have been? Place + and - in the number sentence below to describe the working out on the number line.

$=$ 2 6 15 $= 7$

NAPLAN-ready

Shade the box beneath the correct answer.

Kialla's bank account had a balance of $-\$25$. Kialla deposited her pay and her account balance was then $\$135$. What was the amount of her pay?

$\$95$

☐

$\$110$

☐

$\$155$

☐

$\$160$

☐

Tip Write the question as a number sentence, remembering that a withdrawal is a subtraction and a deposit is an addition.