Walt plotting numbers on a number line and insert signs as greater than and less than
Success Criteria I know that when the numbers increase its called ascend. When they decrease they are called descend. The number on the right is larger on a number line.

A Number line review

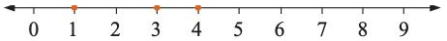
As you move right on a **number line**, the numbers increase (**ascend**). As you move left, the numbers decrease (**descend**).

EXAMPLE 1

Plot each group of numbers on a separate number line, then write the numbers in ascending order.

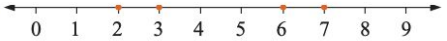
a 3, 4, 1 **b** 2, 6, 7, 3 **c** $2, 2\frac{1}{2}, 1\frac{1}{2}$

a



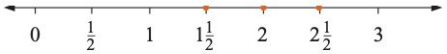
1, 3, 4

b



2, 3, 6, 7

c



$1\frac{1}{2}, 2, 2\frac{1}{2}$

Use a dot to show the position of each number.

1 Plot each group of numbers on a separate number line, then write the numbers in ascending order.

a 5, 3, 6, 2 **b** 3, 1, 5, 8 **c** 15, 12, 16, 10

d $3\frac{1}{2}, 1, 2\frac{1}{2}, 4$ **e** 1.5, 2.8, 0.3 **f** $5\frac{1}{2}, 4\frac{1}{4}, 4\frac{3}{4}$

2 Plot the following numbers on separate number lines.

a the first eight multiples of 2 **b** the factors of 6

c the first five multiples of 4 **d** the factors of 10

e the first six multiples of 3 **f** the factors of 12

g five numbers starting at 3, going up by 2s **h** five numbers starting at 1, going up by 3s

i the numbers starting at 12 and going down by 4s until you reach zero

j the numbers starting at 15 and going down by 3s until you reach zero

EXAMPLE 2

Using separate number lines to help you, insert $>$ or $<$ symbols to make the statements true.

a 5 ___ 3 **b** $3\frac{1}{4}$ ___ $3\frac{1}{2}$

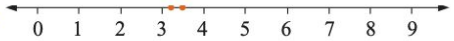
$>$ means 'is larger than'.
$<$ means 'is smaller than'.

The symbols $>$ and $<$ point to the smaller number.

a

5 is to the right of 3, so it is larger than 3: $5 > 3$.

b



$3\frac{1}{4}$ is to the left of $3\frac{1}{2}$, so it is smaller than $3\frac{1}{2}$: $3\frac{1}{4} < 3\frac{1}{2}$.

3 Using separate number lines to help you, insert $>$ or $<$ symbols to make the statements true.

a $6 \_\_\_ 4$ **b** $3 \_\_\_ 8$ **c** $7 \_\_\_ 5$

d $4 \_\_\_ 3$ **e** $3\frac{3}{4} \_\_\_ 2\frac{1}{2}$ **f** $2\frac{1}{3} \_\_\_ 2\frac{2}{3}$

g $15 \_\_\_ 14\frac{1}{2}$ **h** $4.3 \_\_\_ 5.2$

4 **a** Plot the numbers 4 and 7 on a number line.
b Write a statement using $<$ to describe the numbers.
c Write a statement using $>$ to describe the numbers.
d Write two whole numbers between 4 and 7.
e Write three other numbers between 4 and 7.

5 **a** Plot the numbers 9 and 10 on a number line.
b Write a statement using $<$ to describe the numbers.
c Write a statement using $>$ to describe the numbers.
d Write three numbers between 9 and 10.

6 Plot each pair of numbers on a separate number line, and write two other numbers between them.

a 5 and 6 **b** 10 and 11 **c** $\frac{1}{2}$ and 1 **d** 0 and $\frac{1}{4}$

e 1.3 and 1.5 **f** 2.7 and 2.8 **g** 0.1 and 0.2 **h** 0 and 0.1

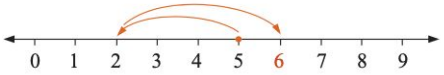
7 How many numbers are there between any two numbers on a number line?

EXAMPLE 3

Use number lines to show the following operations and hence find the answers.

a $5 - 3 + 4$ **b** $3 \times 4 - 2$

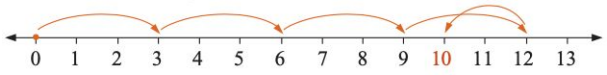
a Start at 5. Move 3 left, then 4 right.



$5 - 3 + 4 = 6$

When adding, move to the right. When subtracting, move to the left.

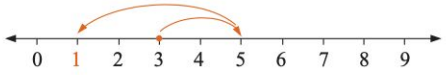
b Start at 0. Move 3 right four times, then 2 left.



$3 \times 4 - 2 = 10$

When multiplying first, start at 0.

8 Copy the number line showing $3 + 2 - 4$ and hence find the answer.



$3 + 2 - 4 =$ _____

9 Represent each set of operations on a number line and hence find the answer.

a $4 + 5 - 3$ **b** $2 + 4 - 5$ **c** $3 + 7 - 4$ **d** $6 - 4 + 1$

e $3 \times 4 + 2$ **f** $2 \times 5 - 4$ **g** $4 \times 2 - 5$ **h** $2 + 3 \times 5$

i $6 + 3 - 5$ **j** $3 \times 4 - 5$ **k** $1 + 5 - 3$ **l** $2 \times 3 - 5$

Check your answers

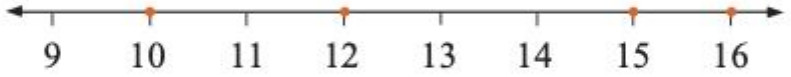
1 a

2, 3, 5, 6

b

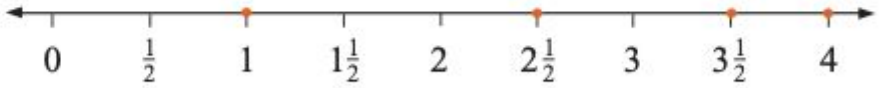
1, 3, 5, 8

c



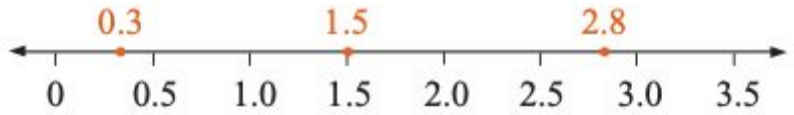
10, 12, 15, 16

d



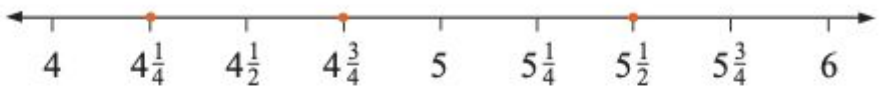
1, $2\frac{1}{2}$, $3\frac{1}{2}$, 4

e



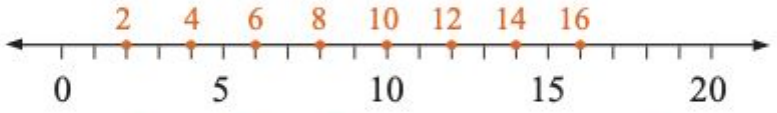
0.3, 1.5, 2.8

f



$4\frac{1}{4}$, $4\frac{3}{4}$, $5\frac{1}{2}$

2 a

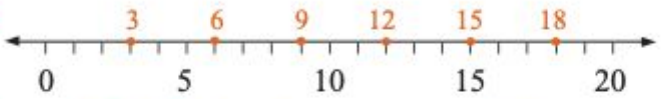


b

c

d

e



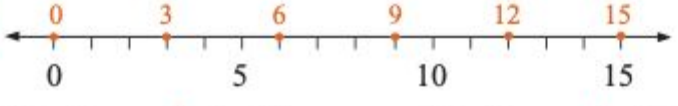
f

g

h

i

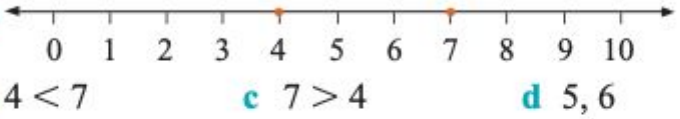
j



3 **a** $6 > 4$ **b** $3 < 8$ **c** $7 > 5$ **d** $4 > 3$

e $3\frac{3}{4} > 2\frac{1}{2}$ **f** $2\frac{1}{3} < 2\frac{2}{3}$ **g** $15 > 14\frac{1}{2}$ **h** $4.3 < 5.2$

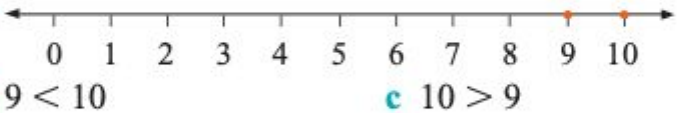
4 **a**



b $4 < 7$ **c** $7 > 4$ **d** 5, 6

e Examples: 5.5, 5.9, 6.1

5 **a**



b $9 < 10$ **c** $10 > 9$

d Examples: 9.1, 9.6, 9.7

6 **a** Examples: 5.3, 5.7 **b** Examples: 10.2, 10.8

c Examples: $\frac{2}{3}, \frac{3}{4}$ **d** Examples: $\frac{1}{8}, \frac{1}{5}$

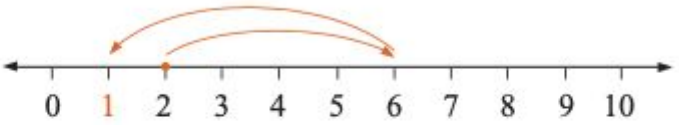
e Examples: 1.35, 1.4 **f** Examples:2.75, 2.79

g Examples:0.13, 0.15 **h** Examples: 0.05, 0.07

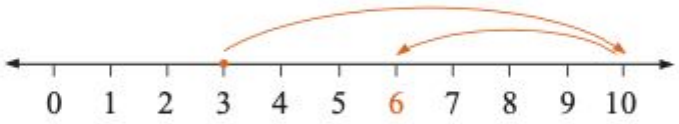
7 An infinite number **8** 1

9 a 6

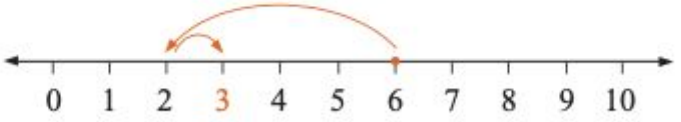
b 1



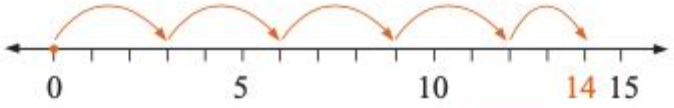
c 6



d 3

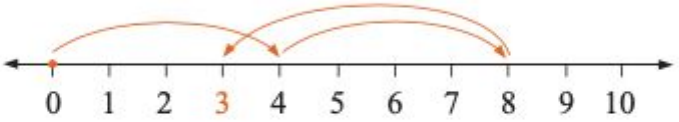


e 14

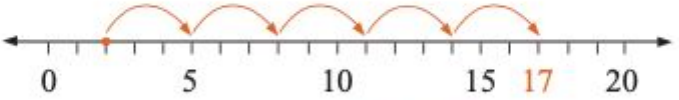


f 6

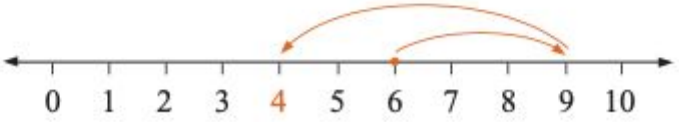
g 3



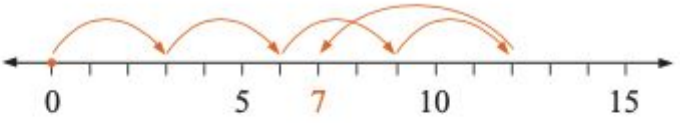
h 17



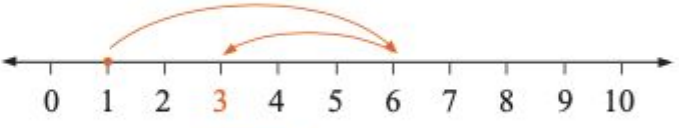
i 4



j 7



k 3



l 1