

Past-paper walk-through

Inequalities ■ E2.6

eXercise

Questions in this set

- 0580/22 N25 Q7 ■ 1 mark
- 0580/41 N25 Q7 ■ 3 marks
- 0580/41 N25 Q24 ■ 9 marks
- 0580/21 J25 Q18 ■ 10 marks
- 0580/41 J25 Q7 ■ 2 marks

Reading the mark scheme

- **B1** a mark that stands on its own – the point is either made or not.
- **M1** a *method* mark: the right approach, even if the number is wrong.
- **A1** an *answer* mark, and it usually needs its M mark first.
- **C1** a working mark on the way to the answer.
- **//** separates answers the examiner accepts equally.
- **ecf** = error carried forward: a later part is marked on your own earlier answer.
- **owtte** = “or words to that effect” – the wording need not match.

Question 7

0580/22 N25 ■ Q7 ■ 1 mark

on the number line. $x - 6 - 5 - 4 - 3 - 2 - 1$ 1 0 2 3 4 5 6

[2]

[1]

Solution 7

Mark scheme

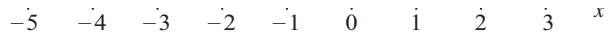
- 2 B1 for open circle at -4 and closed circle
- at 3
- or for a line between -4 and 3 (any
- circles)

Question 7

0580/41 N25 ■ Q7 ■ 3 marks

—

Question 7



Write down the inequality represented in the diagram.

Question 7

(b) Write down the integer values of x that satisfy the inequality $-4 < 2x \leq 8$.

Solution 7

(a)

Mark scheme

- $-3 < x \leq 2$
- 2 B1 for $-3 < x$ or $x \leq 2$

Solution 7

(b) Mark scheme

- $-1, 0, 1, 2, 3, 4$
- 2 B1 for 5 correct (and no extras) or 6 correct with
- one extra
- or B1 for $-2 < x \leq 4/8$ 1.13 or 1.125...
- 1
- 9
- 34.2
- 2 M1 for figs 342 or for $k \times 60 \times 60$ or

Solution 7

- for $k \div 1000$
- 10
- (4, 5)
- 2 B1 for each

Question 24

0580/41 N25 ■ Q24 ■ 9 marks

- 24** Martha walks a distance of 10 km at a speed of x km/h.
She then runs a distance of 5 km at a speed of $(x + 4)$ km/h.
The total time taken for the whole journey is 3.5 hours.

(a) Write down an expression in terms of x for the time Martha is walking.

Question 24

(b) Show that $7x^2 - 2x - 80 = 0$.

Question 24

[4]

- (c) Solve $7x^2 - 2x - 80 = 0$, giving your answers correct to 2 decimal places.
You must show all your working.

Question 24

- (d) Calculate the difference between the time Martha is walking and the time she is running. Give your answer in hours and minutes correct to the nearest minute.

Question 24

h min [31] -

Solution 24

(a)**Mark scheme**

- 10
- x
- 1

Solution 24

(b) Mark scheme

■ their10

■ 5

■ 7

■ 4

■ 2

■ +

■ =

■ +

Solution 24

- x

- x

- oe

- 2

- 20

- 80

- 10

- 7

- 28

- +

Solution 24

■ +

■ =

■ +

■ x

■ x

■ x

■ x oe M2

■ Strict FT for correctly clearing fractions from

■ their three-term equation with two algebraic

■ denominators in x and $x + 4$ and expanding all

Solution 24

- brackets
- Strict M1FT for correctly expressing their two
- algebraic fractions with two denominators in x
- and $x + 4$ as a single fraction or with a common
- denominator within a correct equation
- or for correctly clearing fractions from their
- three-term equation with two algebraic
- denominators in x and $x + 4$ but not all brackets
- expanded
- Leading to

Solution 24

■ 2

■ 7

■ 2

■ 80

■ 0

■ —

■ —

■ =

■ x

■ x **A1**

Solution 24

- No errors or omissions

Solution 24

(c) Mark scheme

- (
-)
- ()(
-)
- ()
- 2
- 2
- ([]2)

Solution 24

- 4 7
- 80
- 2 7
- — —
- $\pm$
- —
- —
- —
- oe B2
- or B1 for

Solution 24

- ()(
-)
- 2
- ([]2)
- 4 7
- 80
- —
- —
- —
- oe or for

Solution 24

- (2)
- 2(7)
- ---
- —
- p oe or for
- (2)
- 2(7)
- ---
- +
- p oe

Solution 24

- or

- 2

- 2

- 14

- (

-)

- —

- (

-)

- (

Solution 24

-)
- x
- -3.24 and 3.53

Solution 24

(d) Mark scheme

- 2h 10min
- 3 B2 for 2.168 to 2.18 [h] or for
- 130.08 to 130.8 [min] or for
- 2hours 10.08 min to 2 hours 10.8 min
- OR M2
- for
- 10
- 5

Solution 24

- 4
- —
- +
- their positive x
- their positive x
- or M1
- for
- 10
- 5
- or

Solution 24

- 4
- their positive x
- their positive $x +$
- 0580/41
- October/November 2025
- Partial Marks

Question 18

0580/21 J25 ■ Q18 ■ 10 marks

- 18** One day, Anya runs 12 km at a speed of x km/h.
The next day she walks 10 km at a speed of $(x - 4)$ km/h.

(a) Write down an expression, in terms of x , for the time she spends running.

Question 18

- (b)** Write down an expression, in terms of x , for the time she spends walking.

Question 18

- (c) The time Anya spends walking is 1 hour more than the time she spends running.

Write an equation in terms of x and show that it simplifies to $x^2 - 2x - 48 = 0$.

Question 18

[4]

(d) Use factorisation to solve the equation $x^2 - 2x - 48 = 0$.

Question 18

- (e) Find the time Anya spends running.

Question 18

Solution 18

(a)**Mark scheme**

- 12
- x
- 1

Solution 18

(b) Mark scheme

- 10
- 4
- —
- x
- 1
- 0580/21
- May/June 2025
- Partial Marks

Solution 18

(c) Mark scheme

- their $10/4$ —
- x
- — their 12
- x
- $= 1$ oe
- $10x - 12x + 48 = x^2 - 4x$ M2
- Correctly multiplying their brackets and
- clearing algebraic fractions

Solution 18

- e.g. (

-) 12

- 4

- 1

- 10

- (

-)

- —

- +

- =

Solution 18

- (
-)
- (
-)
- x
- x
- leading to
- 48
- 12
- 4

Solution 18

- 10
- —
- +
- —
- =
- x
- x
- and then
- 2
- 12

Solution 18

■ 48

■ 4

■ 10

■ —

■ +

■ —

■ =

■ x

■ x

■ x

Solution 18

- x
- or M1 for correctly clearing, or correctly
- collecting into a single fraction, two fractions
- both with different algebraic denominators
- e.g. $10x - 12(x - 4) = x(x - 4)$
- or
- (
-)
- (
-)

Solution 18

- 10
- 12
- 4
- 4
- —
- —
- —
- x
- x
- x x

Solution 18

 $= 1$

- Leading to $0 = x^2 - 2x - 48$
- With no errors or omissions seen, dep on **M3**

Solution 18

(d)

Mark scheme

- $(x + 6)(x - 8)$ M2
- M1 for $x(x - 8) + 6(x - 8)$
- or $x(x + 6) - 8(x + 6)$
- or $(x + a)(x + b)$ where $ab = -48$ or $a + b = -2$
- $-6, 8$

Solution 18

(e)

Mark scheme

- 1.5 or 1 1/2 1 FT
- 12
- 8
- their

Question 7

0580/41 J25 ■ Q7 ■ 2 marks

7 y – 2 – 1 0 1 2 3 4 5

Write down the inequality in y shown by the number line [2] , ,**[2]**

Solution 7

Mark scheme

- $-1.5 \leq y < 4$ final answer
- 2 B1 for $-1.5 \leq y$ or $y < 4$