



ACHIEVE ACADEMY

GCSE Maths — Foundation Tier

Inequalities · Practice Booklet

NAME: _____

CLASS: _____

DATE: _____

☐ Developing

☒ Secure

☐ Greater Depth

Answer every question in the working space provided. Method marks are available for correct working even if the final answer is wrong. Check the time allowed with your tutor before you start.

Inequalities

Total marks available: 79

● Inequalities

$$\checkmark x \leq 1$$

Q1 · ● Developing · 2 marks

METHOD

A filled circle means the number is included ($\leq$ or $\geq$); an open circle means it is not included ($<$ or $>$).

The number line shows $x \leq 1$ · B2 (B1 for one correct end or the wrong type of inequality sign)

$$\checkmark -3, -2, -1, 0$$

Q2 · ● Developing · 2 marks

METHOD

-3 is included; 0 is included

-3, -2, -1, 0 · B2 (B1 for one error or omission)

$$\checkmark x \leq 2$$

Q3 · ● Developing · 2 marks

METHOD

A filled circle means the number is included ($\leq$ or $\geq$); an open circle means it is not included ($<$ or $>$).

The number line shows $x \leq 2$ · B2 (B1 for one correct end or the wrong type of inequality sign)

$$\checkmark n < 7$$

Q4 · ● Developing · 2 marks

METHOD

Subtract 4 from both sides: $n < 7$ · M1 A1

$$\checkmark x > -4$$

Q5 · ● Developing · 2 marks

METHOD

A filled circle means the number is included ($\leq$ or $\geq$); an open circle means it is not included ($<$ or $>$).

The number line shows $x > -4$ · B2 (B1 for one correct end or the wrong type of inequality sign)

$$\checkmark 0, 1, 2, 3$$

Q6 · ● Developing · 2 marks

METHOD

-1 is not included; 3 is included

0, 1, 2, 3 · B2 (B1 for one error or omission)

$$\checkmark x \geq -2$$

Q7 · ● Developing · 2 marks

METHOD

A filled circle means the number is included ($\leq$ or $\geq$); an open circle means it is not included ($<$ or $>$).

The number line shows $x \geq -2$ · B2 (B1 for one correct end or the wrong type of inequality sign)

$$\checkmark y \geq 6$$

Q8 · ● Developing · 2 marks

METHOD

Add 4 to both sides: $y \geq 6$ · M1 A1

$$\checkmark 1, 2, 3, 4, 5, 6, 7$$

Q9 · ● Developing · 2 marks

METHOD

1 is included; 7 is included

1, 2, 3, 4, 5, 6, 7 · B2 (B1 for one error or omission)

$$\checkmark x \geq -3$$

Q10 · ● Developing · 2 marks

METHOD

Subtract 1 from both sides: $x \geq -3$ · M1 A1

$$\checkmark y \geq 3$$

Q11 · ● Secure · 2 marks

METHOD

Subtract 1: $5y \geq 15$

Divide by 5: $y \geq 3$ · M1 A1

$$\checkmark (a) x > 3; (b) \text{ see number line below}$$

Q12 · ● Secure · 3 marks

METHOD

Add 2: $3x > 9$

Divide by 3: $x > 3$

Number line: open circle at 3 with an arrow to the right

M1 · A1 · B1 number line



$$\checkmark (a) x < 5; (b) \text{ see number line below}$$

Q13 · ● Secure · 3 marks

METHOD

Add 4: $3x < 15$

Divide by 3: $x < 5$

Number line: open circle at 5 with an arrow to the left

M1 · A1 · B1 number line



✓ (a) see number line below; (b) 1, 2, 3, 4, 5

Q14 · ● Secure · 3 marks

METHOD

(a) Filled circle at 1, open circle at 6, joined by a line · B2

(b) 1, 2, 3, 4, 5 · B1



✓ $y < 8$

Q15 · ● Secure · 2 marks

METHOD

Subtract 9: $5y < 40$

Divide by 5: $y < 8$ · M1 A1

✓ (a) see number line below; (b) 0, 1, 2, 3

Q16 · ● Secure · 3 marks

METHOD

(a) Filled circle at 0, filled circle at 3, joined by a line · B2

(b) 0, 1, 2, 3 · B1



✓ (a) $x > 1$; (b) see number line below

Q17 · ● Secure · 3 marks

METHOD

Add 4: $4x > 4$

Divide by 4: $x > 1$

Number line: open circle at 1 with an arrow to the right

M1 · A1 · B1 number line



✓ (a) $x \geq 2$; (b) see number line below

Q18 · ● Secure · 3 marks

METHOD

Subtract 2: $3x \geq 6$

Divide by 3: $x \geq 2$

Number line: filled circle at 2 with an arrow to the right

M1 · A1 · B1 number line



✓ $n \geq 6$

Q19 · ● Secure · 2 marks

METHOD

Add 5: $3n \geq 18$

Divide by 3: $n \geq 6$ · M1 A1

✓ (a) see number line below; (b) $-3, -2$

Q20 · ● Secure · 3 marks

METHOD

(a) open circle at -4 , open circle at -1 , joined by a line · B2

(b) $-3, -2$ · B1



✓ $2 \leq x \leq 4$

Q21 · ● Greater Depth · 3 marks

METHOD

Add 4 to all three parts: $8 \leq 4x \leq 16$

Divide by 4: $2 \leq x \leq 4$ · M1 M1 A1

✓ (a) $-1 < x < 1$; (b) see number line below

Q22 · ● Greater Depth · 4 marks

METHOD

Add 1 to all three parts: $-3 < 3x < 3$

Divide by 3: $-1 < x < 1$

Number line: open circle at -1 , open circle at 1 , joined by a line

M1 · A1 · B1 number line



✓ $-2 < x < 2$

Q23 · ● Greater Depth · 3 marks

METHOD

Subtract 1 from all three parts: $-10 < 5x < 10$

Divide by 5: $-2 < x < 2$ · M1 M1 A1

✓ $x > 5$

Q24 · ● Greater Depth · 3 marks

METHOD

$-4x < -20$

Divide both sides by -4 and reverse the inequality sign: $x > 5$

M1 · A1 (A0 if the sign is not reversed)

✓ $x \leq 0$

Q25 · ● Greater Depth · 3 marks

METHOD

$-5x \geq 0$

Divide both sides by -5 and reverse the inequality sign: $x \leq 0$

M1 · A1 (A0 if the sign is not reversed)

✓ (a) $1 < x < 5$; (b) see number line below

Q26 · ● Greater Depth · 4 marks

METHOD

Add 5 to all three parts: $4 < 4x < 20$

Divide by 4: $1 < x < 5$

Number line: open circle at 1, open circle at 5, joined by a line

M1 · A1 · B1 number line



✓ $-4 < x \leq 1$

Q27 · ● Greater Depth · 3 marks

METHOD

Add 5 to all three parts: $-12 < 3x \leq 3$

Divide by 3: $-4 < x \leq 1$ · M1 M1 A1

✓ (a) $2m + 7 \leq 16$; (b) 4 miles

Q28 · ● Greater Depth · 3 marks

METHOD

(a) $2m + 7 \leq 16$ · B1

(b) $2m \leq 9$, so $m \leq 9 \div 2$

Greatest whole number: 4 · M1 A1

✓ $x \geq 1$

Q29 · ● Greater Depth · 3 marks

METHOD

$-5x \leq -5$

Divide both sides by -5 and reverse the inequality sign: $x \geq 1$

M1 · A1 (A0 if the sign is not reversed)

✓ (a) $3m + 4 \leq 29$; (b) 8 miles

Q30 · ● Greater Depth · 3 marks

METHOD

(a) $3m + 4 \leq 29$ · B1

(b) $3m \leq 25$, so $m \leq 25 \div 3$

Greatest whole number: 8 · M1 A1