2.18 Inequalities and Number Lines: 1-hour Pack

Calculators not allowed · about 60 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Solve $2x < -8$

(2)

2 m is an integer. Write down all the values of m that satisfy $-4 \leq m < 2$.

(2)

3 Solve $9 \leq 4x + 5 \leq 25$

(3)

4 Solve $3x < 3$

(2)

5 x is an integer. Write down all the values of x that satisfy $-2 \leq x \leq 4$.

(2)

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6 Solve $7 \leq 5m - 3 < 27$

(3)

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7 Solve $4k + 2 \leq 22$

(2)

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8 A number line has a open circle at -6 and a open circle at 0, with the line between the circles shaded.
Write down the inequality shown.

(2)

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9 Solve $-3 \leq 4m - 3 < 17$

(3)

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10 (a) Solve $4x + 1 < 9$.
(b) x is an integer greater than or equal to -1. Write down all the values of x that satisfy the inequality.

(3)

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11 A number line has a open circle at -5 and a solid circle at 2, with the line between the circles shaded.
Write down the inequality shown.

(2)

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12 Solve $-4x \geq -8$

(3)

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13 (a) Solve $3x + 5 \leq 17$.
(b) x is an integer greater than or equal to 0. Write down all the values of x that satisfy the inequality.

(3)

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14 n is an integer. Write down all the values of n that satisfy $0 \leq n \leq 4$.

(2)

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15 (a) Solve $4x + 3 < 19$.
(b) x is an integer greater than or equal to -2. Write down all the values of x that satisfy the inequality.

(3)

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16 Solve $-5x < 15$

(3)

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17 The integer x is at least -5 and at most -3. Write this as an inequality.

(2)

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18 Solve $2 < 2m + 2 \leq 14$

(3)

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19 Solve $n + 8 \geq 10$

(1)

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Mark scheme · 2.18 Inequalities and Number Lines: 1-hour Pack

Question 1

correct first step with an inequality sign kept or an equation solved	M1
x < -4 cao	A1

Answer: **x < -4**

Question 2

at least half of the values or all values with one extra or missing	M1
-4, -3, -2, -1, 0, 1 cao	A1

Answer: **-4, -3, -2, -1, 0, 1**

Question 3

subtracts the number term from all three parts	M1
divides all three parts by the coefficient	M1
1 ≤ x ≤ 5 cao	A1

Answer: **1 ≤ x ≤ 5**

Question 4

correct first step with an inequality sign kept or an equation solved	M1
x < 1 cao	A1

Answer: **x < 1**

Question 5

at least half of the values or all values with one extra or missing	M1
-2, -1, 0, 1, 2, 3, 4 cao	A1

Answer: **-2, -1, 0, 1, 2, 3, 4**

Question 6

subtracts the number term from all three parts	M1
divides all three parts by the coefficient	M1
2 ≤ m < 6 cao	A1

Answer: **2 ≤ m < 6**

Question 7

correct first step with an inequality sign kept or an equation solved	M1
k ≤ 5 cao	A1

Answer: **k ≤ 5**

Question 8

-6 < x	B1
x < 0	B1

Answer: **-6 < x < 0**

Question 9

subtracts the number term from all three parts	M1
divides all three parts by the coefficient	M1
0 ≤ m < 5 cao	A1

Answer: **0 ≤ m < 5**

Question 10

correct first step	M1
(a) x < 2	A1
(b) -1, 0, 1	B1

Answer: **(a) x < 2, (b) -1, 0, 1**

Question 11

-5 < x	B1
x ≤ 2	B1

Answer: **-5 < x ≤ 2**

Question 12

correct first step	M1
divides by the negative number	M1
x ≤ 2 cao (inequality sign reversed)	A1

Answer: **x ≤ 2**

Question 13

correct first step	M1
(a) x ≤ 4	A1
(b) 0, 1, 2, 3, 4	B1

Answer: **(a) x ≤ 4, (b) 0, 1, 2, 3, 4**

Question 14

at least half of the values or all values with one extra or missing	M1
0, 1, 2, 3, 4 cao	A1

Answer: **0, 1, 2, 3, 4**

Question 15

correct first step	M1
(a) x < 4	A1
(b) -2, -1, 0, 1, 2, 3	B1

Answer: **(a) x < 4, (b) -2, -1, 0, 1, 2, 3**

Question 16

correct first step	M1
divides by the negative number	M1
x > -3 cao (inequality sign reversed)	A1

Answer: **x > -3**

Question 17

-5 ≤ x	B1
x ≤ -3	B1

Answer: **-5 ≤ x ≤ -3**

Question 18

subtracts the number term from all three parts	M1
divides all three parts by the coefficient	M1
0 < m ≤ 6 cao	A1

Answer: **0 < m ≤ 6**

Question 19

n ≥ 2 cao	B1

Answer: **n ≥ 2**

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