2.18 Inequalities and Number Lines: 30-minute Pack

Calculators not allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Solve $4(x - 3) > 8$. Show your steps and give the solution as an inequality.

(2)

2 Solve the compound inequality and give the solution in inequality form: $1 \leq 2x + 1 < 7$.

(2)

3 Solve the inequality $7 - 2x > 1$ and write the solution in inequality form.

(2)

4 (a) Solve $2x + 3 < 9$.

(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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5 m is an integer. Write down all the values of m that satisfy $-1 \leq m < 4$.

(2)

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6 Solve $5 \leq 3m + 2 \leq 20$

(3)

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7 A number line has a solid circle at -2 and a open circle at 6, with the line between the circles shaded.
Write down the inequality shown.

(2)

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8 x is an integer. Write down all the values of x that satisfy $-3 \leq x < 1$.

(2)

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9 Solve $-3x \geq 3$

(3)

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10 The integer x is greater than -4 and less than 1. Write this as an inequality.

(2)

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11 Solve n + 3 > 12

(1)

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12 State whether x = -1 satisfies the inequality x ≤ -1.

(1)

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Mark scheme · 2.18 Inequalities and Number Lines: 30-minute Pack

Question 1

expand or divide: 4x - 12 > 8 then 4x > 20	M1
x > 5 cao	A1

Answer: **x > 5**

Question 2

subtracts 1 across: 0 ≤ 2x < 6 then divides by 2 correctly	M1
0 ≤ x < 3 cao	A1

Answer: **0 ≤ x < 3**

Question 3

subtracts 7: -2x > -6 then divides by -2 and reverses inequality sign	M1
x < 3 cao	A1

Answer: **x < 3**

Question 4

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

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

Question 5

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

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

Question 6

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

Answer: **1 ≤ m ≤ 6**

Question 7

-2 ≤ x	B1
x < 6	B1

Answer: **-2 ≤ x < 6**

Question 8

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

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

Question 9

correct first step	M1
divides by the negative number	M1
x ≤ -1 cao (inequality sign reversed)	A1

Answer: **x ≤ -1**

Question 10

-4 < x	B1
x < 1	B1

Answer: **-4 < x < 1**

Question 11

n > 9 cao	B1

Answer: **n > 9**

Question 12

Yes, because -1 is equal to -1, which satisfies ≤	B1

Answer: **Yes**

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