2.14-2 Early Algebra: Practice Set 2: 30-minute Pack

GL ASSESSMENT GL · Calculators not allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Simplify 6 x k x 3.

- [ ] A) 9k
- [ ] B) 18
- [ ] C) 24k
- [ ] D) 18k
- [ ] E) 63k

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2 Solve 3x + 4 = 19.

- [ ] A) 15
- [ ] B) 23
- [ ] C) 6
- [ ] D) -5
- [ ] E) 5

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3 Solve x - 5 < 3.

- [ ] A) x < 8
- [ ] B) x < -2
- [ ] C) x < 13
- [ ] D) x < 3
- [ ] E) x > 8

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4 c = -4 and d = 7. Work out d - c.

- [ ] A) 3
- [ ] B) -11
- [ ] C) 11
- [ ] D) -3
- [ ] E) 28

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5 Solve $4x = 28$.

- ☐ A) 112
- ☐ B) 7
- ☐ C) 6
- ☐ D) 24
- ☐ E) 32

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6 Write an expression for each statement. Use p, m or y for the unknown number as shown.

(a) 6 more than p **(1)**

.....

(b) treble m, then add 4 **(1)**

.....

(c) the cost, in pounds, of y stickers at 25p each **(1)**

.....

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7 Expand $4(x + 5)$.

- ☐ A) $4x + 5$
- ☐ B) $x + 20$
- ☐ C) $4x + 20$
- ☐ D) $9x$
- ☐ E) $4x + 9$

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8 Expand $-3(y + 2)$.

- ☐ A) $3y - 6$
- ☐ B) $-3y - 2$
- ☐ C) $y - 6$
- ☐ D) $-3y - 6$
- ☐ E) $-3y + 6$

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9 A sequence has nth term 5n - 2. Work out the 8th term.

- ☐ A) 40
- ☐ B) 30
- ☐ C) 36
- ☐ D) -11
- ☐ E) 38

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10 Solve 6x - 5 = 3x + 10.

- ☐ A) 3
- ☐ B) 5
- ☐ C) 1
- ☐ D) 15
- ☐ E) -5

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11 Solve (3x + 1)/4 = 7.

- ☐ A) 2
- ☐ B) 8
- ☐ C) 21
- ☐ D) 9
- ☐ E) 10

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12 Ahmed thinks of a number. He multiplies it by 4, then subtracts 7. His result is 25. Let n be Ahmed's number.

(a) Form an equation in n that models this information. **(1)**

(b) Solve this equation to find the value of n. **(2)**

.....

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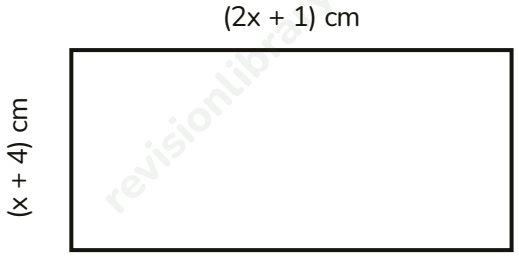
13 List all the integer values of x that satisfy $-3 < x \leq 2$.

(2)

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14 A rectangle has length $(2x + 1)$ cm and width $(x + 4)$ cm. The perimeter of the rectangle is 40 cm.

Diagram NOT accurately drawn



(not to scale)

(a) Show that $6x + 10 = 40$. **(2)**

(b) Solve this equation to find x. **(2)**

.....

(c) Calculate the length and the width of the rectangle. **(2)**

.....

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15 Solve $11 - 3x > 2$.

- ☐ A) $x > 9$
- ☐ B) $x < 9$
- ☐ C) $x > 3$
- ☐ D) $x > -3$
- ☐ E) $x < 3$

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16 The sum of three consecutive even numbers is 90. Let the smallest of the three even numbers be n.

(a) Write an expression, in terms of n, for the sum of the three consecutive even numbers. **(1)**

(b) Set up and solve an equation to find n. **(2)**

(c) State the three consecutive even numbers. **(1)**

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17 A cinema charges (2x + 1) pounds for an adult ticket and (x - 2) pounds for a child ticket. Fatima buys 3 adult tickets and 2 child tickets. The total cost is £47.

(a) Form an equation in x to represent the total cost. **(1)**

(b) Solve your equation to find the value of x. **(2)**

(c) Find the cost of one adult ticket and the cost of one child ticket. **(2)**

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Mark scheme · 2.14-2 Early Algebra: Practice Set 2: 30-minute Pack

A correct answer earns full marks unless the question asks for working, a method, proof or explanation.

Question 1

D (18k) cao **B1**

Answer: 18k

Question 2

E (x = 5) cao **B1**

Answer: x = 5

Question 3

A (x < 8) cao **B1**

Answer: x < 8

Question 4

C (11) cao **B1**

Answer: 11

Question 5

B (x = 7) cao **B1**

Answer: x = 7

Question 6

(a) p + 6 oe **B1**

(a) Answer: p + 6

(b) 3m + 4 oe **B1**

(b) Answer: 3m + 4

(c) y/4 oe (accept 0.25y) **B1**

(c) Answer: y/4 (or 0.25y)

Question 7

C (4x + 20) cao **B1**

Answer: 4x + 20

Question 8

D (-3y - 6) cao **B1**

Answer: -3y - 6

Question 9

E (38) cao **B1**

Answer: 38

Question 10

B (x = 5) cao; accept an equivalent route to the same value without algebra, such as trial and improvement **B1**

Answer: x = 5

Question 11

D (x = 9) cao **B1**

Answer: x = 9

Question 12

(a) 4n - 7 = 25 oe **B1**

(a) Answer: 4n - 7 = 25

(b) 4n = 32 seen (ft from their equation) **M1**

(b) n = 8 cao **A1**

(b) Answer: n = 8

Question 13

end values used correctly (x = -2 included, x = 2 included) **B1**

-2, -1, 0, 1, 2 all listed cao, no extras **B1**

Answer: -2, -1, 0, 1, 2

Question 14

(a) 2[(2x + 1) + (x + 4)] seen (correct perimeter expression) **M1**

(a) correctly simplified to 6x + 10 = 40 cso (answer given) **A1**

(a) Answer: 6x + 10 = 40 (shown)

(b) 6x = 30 seen **M1**

(b) x = 5 cao **A1**

(b) Answer: x = 5

(c) length = 11 cm cao (ft) **B1**

(c) width = 9 cm cao (ft) **B1**

(c) Answer: length = 11 cm, width = 9 cm

Question 15

E (x < 3) cao (inequality sign correctly reversed when dividing by a negative number) **B1**

Answer: x < 3

Question 16

(a) n + (n+2) + (n+4) oe, or 3n + 6 oe **B1**

(a) Answer: 3n + 6

(b) 3n + 6 = 90 seen (ft), leading to 3n = 84 **M1**

(b) n = 28 cao **A1**

(b) Answer: n = 28

(c) 28, 30 and 32 all correct (ft) **B1**

(c) Answer: 28, 30, 32

Question 17

(a) 3(2x + 1) + 2(x - 2) = 47 oe, or simplified to 8x - 1 = 47 **B1**

(a) Answer: 3(2x + 1) + 2(x - 2) = 47

(b) 6x + 3 + 2x - 4 = 47 seen (both brackets expanded correctly), leading to 8x - 1 = 47 **M1**

(b) x = 6 cao **A1**

(b) Answer: x = 6

(c) adult ticket = £13 cao (ft) **B1**

(c) child ticket = £4 cao (ft) **B1**

(c) Answer: adult ticket = £13, child ticket = £4

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