2.13-3 Sequences, Patterns and Early Algebra: Practice Set 3: 10-minute Pack

Total Marks

GL ASSESSMENT EP.M56 · Calculators not allowed · about 10 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

Sequences, Patterns and Early Algebra: Practice Set 3

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A third 11+ sequences, patterns and early-algebra practice set, complementing EP.M13/EP.M13B (Sequences and Patterns), EP.M14/EP.M14B (Early Algebra) and EP.M28/EP.M39 (Algebra, Sequences and Patterns Depth). It covers term-to-term and position-to-term sequences, linear nth-term rules, function machines, forming and simplifying expressions, and one-step and two-step equations, with an entirely fresh set of numbers, contexts and names. Questions are ramped from straightforward warm-up items to demanding multi-step and reverse-reasoning problems.

1 The nth term of a sequence is 5n - 6.

Work out the 14th term of the sequence.

(1)

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2 The nth term of a sequence is 7n + 4.

(a) Write down the first three terms of the sequence. **(1)**

(b) Is 100 a term in this sequence? Show your working to explain your answer. **(2)**

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3 A function machine works like this: input, then multiply by 5, then subtract 8, to give the output.

(a) Find the output when the input is 9. **(1)**

.....

(b) Find the input when the output is 52. Show your working. **(2)**

.....

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4 Write an expression for each statement. Use the letter given for the unknown number.

(a) 7 less than a number w **(1)**

.....

(b) a number t is trebled, then 5 is added **(1)**

.....

(c) the cost, in pounds, of h headphones at 60p each **(1)**

.....

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5 Simplify fully.

(a) $9x - 4x + 2x$ **(1)**

(b) $5p + 6q - 2p - q$ **(1)**

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Mark scheme · 2.13-3 Sequences, Patterns and Early Algebra: Practice Set 3: 10-minute Pack

Question 1

64 cao **B1**

Answer: 64

Question 2

(a) 11, 18, 25 all correct cao **B1**

(a) Answer: 11, 18, 25

(b) sets 7n + 4 = 100 and attempts to solve for n **M1**

(b) correct conclusion with valid reason: No, because n = 96/7 = 13.71..., which is not a whole number **A1**

(b) Answer: No, because n is not a whole number (n = 96/7 = 13.71...)

Question 3

(a) 37 cao **B1**

(a) Answer: 37

(b) correct reverse method: add 8 then divide by 5 oe **M1**

(b) 12 cao **A1**

(b) Answer: 12

Question 4

(a) w - 7 oe **B1**

(a) Answer: w - 7

(b) 3t + 5 oe **B1**

(b) Answer: 3t + 5

(c) 0.6h oe (accept 3h/5) **B1**

(c) Answer: 0.6h (or 3h/5)

Question 5

(a) 7x cao **B1**

(a) Answer: 7x

(b) 3p + 5q oe cao **B1**

(b) Answer: 3p + 5q

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