Test answers - Algebra: formulae, sequences and missing numbers

Year: Year 6 · Duration: 40 minutes · /20

Answer to Question 1 (3 marks)

a. Replace h with 3: $4 \times 3 = 12$ and $8 + 12 =$ **£20**. (1 mark)
b. Set the formula equal to 28: $8 + 4h = 28$. Take away 8: $4h = 20$; divide by 4: $h =$ **5 hours**. Check: $8 + 4 \times 5 = 28$. (1 mark)
c. Two lengths and two widths: $P = 2l + 2w$. With $l = 9$ and $w = 4$: $18 + 8 =$ **26 cm**. (1 mark)

Answer to Question 2 (4 marks)

a. Add 7 each time: **31, 38**. (1 mark)
b. The difference is 4. $4n$ gives 4, 8, 12, 16, so add 2: $4n + 2$. (1 mark)
c. $4 \times 30 + 2 =$ **122**. (1 mark)
d. $4n + 2 = 82$ gives $4n = 80$ and $n = 20$. **Yes**, 82 is the 20th term. (1 mark)

Answer to Question 3 (4 marks)

a. Undo adding 14 by subtracting it: $n = 39 - 14 =$ **25**. Check: 25 + 14 = 39. (1 mark)
b. $5a$ means 5 times a, so divide: $a = 65 \div 5 =$ **13**. (1 mark)
c. Subtract 7 first: $3x = 27$; then divide by 3: $x =$ **9**. Check: $3 \times 9 + 7 = 34$. (1 mark)
d. Add 9 to both sides: $4y = 28$; divide by 4: $y =$ **7**. Check: $28 - 9 = 19$. (1 mark)

Answer to Question 4 (4 marks)

a. (12, 0), (11, 1), (10, 2), (9, 3), (8, 4), (7, 5). (1 mark)
b. For example (0, 10), (2, 6), (4, 2), (1, 8), (3, 4), (5, 0). Any three of these. (1 mark)
c. 1 part + 4 parts = 5 parts = 30, so 1 part = 6. The numbers are **6 and 24**. (2 marks)

Answer to Question 5 (5 marks)

a. $C = 60 + 25 \times 3 =$ **£135**. (1 mark)
b. The rule is $C = 25h + 60$. The **25** is the cost for each hour, and the **60** is the fixed

charge. (1 mark)

c. $60 + 25h = 200$ gives $25h = 140$ and $h = 5.6$. The longest whole number of hours is **5 hours** (or 5 hours 36 minutes). (2 marks)

d. First company: $60 + 25 \times 5 = 185$. Second company: $40 + 30 \times 5 = 190$. The first company is **£5 cheaper**. (1 mark)