



3.13F Substitution: Foundation Tier Practice

EDEXCEL Edexcel 1MA1 · Calculator allowed · about 50 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** Work out the value of $3x + 4$ when $x = 2$.

(Total for Question 1 is 1 mark)

- 2** Evaluate $5a - 2$ when $a = 3$.

(Total for Question 2 is 1 mark)

- 3** Work out the value of $2x^2 + 1$ when $x = 3$. Show your method.

(Total for Question 3 is 2 marks)

- 4** A rectangle has length $l = 7$ cm and width $w = 3$ cm. The perimeter P is given by $P = 2(l + w)$.
Work out P .

(Total for Question 4 is 1 mark)

- 5** Evaluate the expression $4t - 3$ when $t = 1.5$.

(Total for Question 5 is 2 marks)

6 The formula $S = 3x + 2y$ gives the score S . Find S when $x = 2$ and $y = 5$.

(Total for Question 6 is 2 marks)

7 Evaluate $7 - 2x$ when $x = -1$.

(Total for Question 7 is 2 marks)

8 The formula for the cost C (in pounds) of m apples and n bananas is $C = 0.30m + 0.20n$. Work out C when $m = 4$ and $n = 6$. Give your answer to the nearest penny.

(Total for Question 8 is 3 marks)

9 Given the formula $V = lwh$, find V when $l = 5$ cm, $w = 3$ cm and $h = 2$ cm.

(Total for Question 9 is 2 marks)

10 The temperature T (in degrees Celsius) after t hours is given by $T = 20 - 0.5t$. Work out T when $t = 6$. Show your working.

(Total for Question 10 is 3 marks)

- 11** A toy car travels at speed v given by $v = d / t$ where d is distance in metres and t is time in seconds. Find v when $d = 150$ m and $t = 15$ s. Give the unit.

(Total for Question 11 is 4 marks)

- 12** The formula $A = \pi r^2$ gives the area A of a circle. Use $\pi = 3.14$. Work out A when $r = 4$ cm. Give your answer to 1 decimal place.

(Total for Question 12 is 3 marks)

- 13** Evaluate the expression $(x + 2)$ (when $x = 5$) and then find 3 times that result. In other words, first find $x + 2$, then multiply by 3.

(Total for Question 13 is 2 marks)

- 14** A small packet of crisps contains m grams of crisps. The energy E in kilocalories is given by $E = 5m$. How many kilocalories are in a packet with mass 30 g? Give your answer.

(Total for Question 14 is 2 marks)

Mark scheme · 3.13F Substitution: Foundation Tier Practice

Question 1

- **B1** 10 cao
- **Answer: 10**

Question 2

- **B1** 13 cao
- **Answer: 13**

Question 3

- **M1** substitute $x = 3$ and evaluate $2 \times 3^2 + 1$ or equivalent method
- **A1** 19 cao
- **Answer: 19**

Question 4

- **B1** 20 cm cao
- **Answer: 20 cm**

Question 5

- **M1** substitute $t = 1.5$ and show multiplication 4×1.5 or equivalent
- **A1** 3.0 or 3 cao
- **Answer: 3**

Question 6

- **M1** substitute $x = 2$ and $y = 5$ into $3x + 2y$
- **A1** 16 cao
- **Answer: 16**

Question 7

- **M1** substitute $x = -1$ and show $7 - 2 \times (-1)$ or equivalent method
- **A1** 9 cao
- **Answer: 9**

Question 8

- **M1** substitute $m = 4$ and $n = 6$ into $0.30m + 0.20n$ and evaluate
- **M1** add totals for apples and bananas correctly
- **A1** £2.40 cao
- **Answer: 2.40**

Question 9

- **M1** substitute and multiply $l \times w \times h$
- **A1** 30 cm^3 cao
- **Answer: 30 cm^3**

Question 10

- **M1** substitute $t = 6$ into $20 - 0.5t$ and show multiplication 0.5×6
- **M1** perform subtraction $20 - 3.0$
- **A1** 17 degrees C cao
- **Answer: 17 degrees C**

Question 11

- **M1** substitute $d = 150$ and $t = 15$ into $v = d / t$
- **M1** perform division $150 / 15$ or show equivalent
- **A1** 10 cao
- **B1** correct unit m/s stated
- **Answer: 10 m/s**

Question 12

- **M1** substitute $r = 4$ into $A = \pi r^2$ and use $\pi = 3.14$
- **M1** calculate 3.14×16 correctly
- **A1** 50.3 cm^2 awrt
- **Answer: 50.2 cm^2**

Question 13

- **M1** find $x + 2 = 7$ and show multiplication by 3
- **A1** 21 cao
- **Answer: 21**

Question 14

- **M1** substitute $m = 30$ into $E = 5m$
- **A1** 150 kcal cao
- **Answer: 150 kilocalories**