



5.6F Changing the Subject of a Formula: Foundation Tier Practice

Total Marks

EDEXCEL Edexcel 1MA1 · Calculator allowed · about 50 minutes

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** Make b the subject of the formula $a = b + 7$.

(Total for Question 1 is 1 mark)

- 2** Make d the subject of the formula $c = 3d$.

(Total for Question 2 is 1 mark)

- 3** Make n the subject of the formula $m = (n + 4) / 5$. Show each step.

(Total for Question 3 is 2 marks)

- 4** Make h the subject of the formula $V = l \times w \times h$.

(Total for Question 4 is 1 mark)

- 5** Make x the subject of the formula $p = 2x + 5$, then find x when $p = 17$.

(a) Make x the subject.

(1)

(b) Use your formula to find x when $p = 17$.

(1)

(Total for Question 5 is 2 marks)

6 The formula $s = (t - 3) / 4$. Make t the subject, then find t when $s = 5$.

(a) Make t the subject. (1)

(b) Complete the rearrangement to give t in terms of s . (1)

(c) Find t when $s = 5$. (1)

(Total for Question 6 is 3 marks)

7 Make l the subject of the formula for perimeter $P = 2l + 2w$.

(Total for Question 7 is 2 marks)

8 The area of a trapezium is given by $A = (a + b)/2 \times h$. Make h the subject of the formula.

(Total for Question 8 is 2 marks)

9 Make y the subject of the formula $4(y + 2) = 20$. Then find y .

(a) Make y the subject. (1)

(b) Find y . (1)

(Total for Question 9 is 2 marks)

10 The formula $F = m \times a$ links force F , mass m and acceleration a . Make m the subject. Then calculate m when $F = 50 \text{ N}$ and $a = 2.5 \text{ m/s}^2$. Give your answer to 1 decimal place.

(a) Make m the subject of $F = m \times a$. (2)

(b) Calculate m when $F = 50 \text{ N}$ and $a = 2.5 \text{ m/s}^2$. Give your answer to 1 decimal place. (2)

(Total for Question 10 is 4 marks)

11 Make u the subject of the formula $w = u / v$. Then find u when $w = 12$ and $v = 3$.

(a) Make u the subject of $w = u / v$. (1)

(b) Find u when $w = 12$ and $v = 3$. (1)

(Total for Question 11 is 2 marks)

12 The formula for average speed is $s = d / t$, where s is speed in km/h , d is distance in km and t is time in hours. Make t the subject, then find t when $s = 60 \text{ km/h}$ and $d = 30 \text{ km}$. Give your answer in hours and minutes.

(a) Make t the subject of $s = d / t$. (1)

(b) Calculate t when $s = 60$ and $d = 30$. Give your answer in hours and minutes. (2)

(Total for Question 12 is 3 marks)

Mark scheme · 5.6F Changing the Subject of a Formula: Foundation Tier Practice

Question 1

- **B1** $b = a - 7$ cao
- **Answer:** $b = a - 7$

Question 2

- **B1** $d = c/3$ cao
- **Answer:** $d = c/3$

Question 3

- **M1** multiply both sides by 5 or show method leading to $n + 4 = 5m$
- **A1** $n = 5m - 4$ cao
- **Answer:** $n = 5m - 4$

Question 4

- **B1** $h = V/(l \times w)$ cao
- **Answer:** $h = V/(l \times w)$

Question 5

- (a) **B1** $x = (p - 5)/2$ cao
- (a) **Answer:** $x = (p - 5)/2$
- (b) **A1** 6 cao
- (b) **Answer:** 6

Question 6

- (a) **M1** multiply both sides by 4 to get $t - 3 = 4s$
- (a) **Answer:** $t - 3 = 4s$
- (b) **A1** $t = 4s + 3$ cao
- (b) **Answer:** $t = 4s + 3$
- (c) **A1** 23 cao
- (c) **Answer:** 23

Question 7

- **M1** subtract $2w$ from both sides to get $2l = P - 2w$
- **A1** $l = (P - 2w)/2$ cao
- **Answer:** $l = (P - 2w)/2$

Question 8

- **M1** divide both sides by $(a + b)/2$ or multiply both sides by 2 then divide by $(a + b)$
- **A1** $h = 2A/(a + b)$ cao
- **Answer:** $h = 2A/(a + b)$

Question 9

- (a) **M1** divide both sides by 4 to get $y + 2 = 5$ or show equivalent method
- (a) **Answer:** $y + 2 = 5$
- (b) **A1** 3 cao
- (b) **Answer:** 3

Question 10

- (a) **M1** divide both sides by a or show method leading to $m = F/a$
- (a) **A1** $m = F/a$ **cao**
- (a) **Answer: $m = F/a$**
- (b) **M1** substitute values into $m = F/a$ and calculate $50/2.5$
- (b) **A1** 20.0 kg **awrt**
- (b) **Answer: 20.0 kg**

Question 11

- (a) **M1** multiply both sides by v to get $u = wv$ or show equivalent method
- (a) **Answer: $u = wv$**
- (b) **A1** 36 **cao**
- (b) **Answer: 36**

Question 12

- (a) **M1** rearrange to $t = d/s$ or show method leading to $t = d/s$
- (a) **Answer: $t = d/s$**
- (b) **M1** substitute values into $t = d/s$ and calculate $30/60 = 0.5$
- (b) **A1** $0.5 \text{ h} = 30 \text{ minutes}$ **cao**
- (b) **Answer: $0.5 \text{ hours} = 30 \text{ minutes}$**