5.6 Changing the Subject of a Formula: 30-minute Pack

Total Marks

EDEXCEL 1MA1 · Calculator allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 This question has two parts.

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

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

.....

(Total for Question 1 is 2 marks)

---

2 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 2 is 2 marks)

---

3 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 3 is 2 marks)

© Revision Library | revisionlibrary.co.uk

4 The formula s = (t - 3) / 4.

(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 4 is 3 marks)

---

5 Rearrange the formula for the frequency f of a wave: v = f * λ, to make λ the subject. Then a wave has speed v = 330 m/s and frequency f = 440 Hz. Calculate the wavelength λ to 3 significant figures.

(a) Make λ the subject of v = f * λ. **(1)**

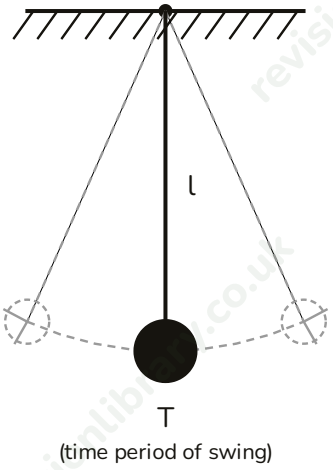
(b) Calculate λ for v = 330 m/s and f = 440 Hz and give the answer to 3 significant figures. **(4)**

.....

(Total for Question 5 is 5 marks)

© Revision Library | revisionlibrary.co.uk

6 The time period T of a pendulum of length l is given by $T = 2 * \pi * \sqrt{l/g}$, where g is the acceleration due to gravity. Make l the subject of the formula.



(Total for Question 6 is 4 marks)

---

7 Make t the subject of $v = (t + 7)/4$.

(Total for Question 7 is 2 marks)

---

8 Make x the subject of $6x + y = 3x + c$.

(Total for Question 8 is 3 marks)

© Revision Library | revisionlibrary.co.uk

Mark scheme · 5.6 Changing the Subject of a Formula: 30-minute Pack

Question 1

(a) multiply both sides by v to get u = wv or show equivalent method **M1**

(a) Answer: u = wv

(b) 36 cao **A1**

(b) Answer: 36

Question 2

(a) x = (p - 5)/2 cao **B1**

(a) Answer: x = (p - 5)/2

(b) 6 cao **A1**

(b) Answer: 6

Question 3

(a) divide both sides by 4 to get y + 2 = 5 or show equivalent method **M1**

(a) Answer: y + 2 = 5

(b) 3 cao **A1**

(b) Answer: 3

Question 4

(a) multiply both sides by 4 to get t - 3 = 4s **M1**

(a) Answer: t - 3 = 4s

(b) t = 4s + 3 cao **A1**

(b) Answer: t = 4s + 3

(c) 23 cao **A1**

(c) Answer: 23

Question 5

(a) $\lambda = v/f$ cao **B1**

(a) Answer: $\lambda = v/f$

(b) substitute values and divide: $\lambda = 330/440$ **M1**

(b) 0.75 cao **A1**

(b) units m stated or implied **B1**

(b) answer correct to 3 s.f. (0.75) award **SC1**

(b) Answer: 0.75 m

Question 6

divides both sides by $2 * \pi$, e.g. $T/(2*\pi) = \sqrt{l/g}$ **M1**

squares both sides, e.g. $T^2/(4*\pi^2) = l/g$ **M1**

multiplies both sides by g, dependent on the previous method mark **dM1**

$l = g * T^2/(4 * \pi^2)$ oe, cao **A1**

Answer: $l = g * T^2/(4 * \pi^2)$

Question 7

first step, e.g. 4v = t + 7 **M1**

t = 4v - 7 oe **A1**

Answer: t = 4v - 7

Question 8

collects x terms on one side **M1**

factorises or divides correctly **M1**

x = (c - y)/3 oe **A1**

Answer: x = (c - y)/3

© Revision Library | revisionlibrary.co.uk