Test - Formulae and identities

Year: Year 10 · Duration: 45 minutes · /20

Name:	Date:	**Mark: /20**

Question	1	2	3	4	5	Total
marks	4	4	4	4	4	**20**
Mark						

Show your working.

Question 1 (4 marks)

Question 1 – Substitution and rearranging

Calculator allowed.

a. Use $s = ut + \frac{1}{2}at^2$ to work out s when $u = 6$, $a = -2$ and $t = 4$. (2 marks)
b. Make x the subject of $y = 5x - 3$. (2 marks)

Question 2 (4 marks)

Question 2 – Changing the subject

Non-calculator.

a. Make r the subject of $A = \pi r^2$ where $r > 0$. (2 marks)
b. Make m the subject of $E = \frac{1}{2}mv^2$. (2 marks)

Question 3 (4 marks)

Question 3 – Identity and proof

Calculator allowed.

a. Show that $(x + 4)(x - 4) + 16 \equiv x^2$. (2 marks)
b. Prove that the sum of three consecutive even numbers is a multiple of 6. Let the numbers be $2n$, $2n + 2$, $2n + 4$. (2 marks)

Question 4 (4 marks)

Question 4 – Problem: the taxi

A taxi company charges £C for a journey of d miles using the formula $C = 2.50 + 1.70d$.

a. Work out the cost of a 12-mile journey. (1 mark)

b. A journey costs £29.40. Work out the distance. (2 marks)
c. Make d the subject of the formula. (1 mark)

Question 5 (4 marks)

Question 5 – Higher: the subject appears twice

Higher tier.

a. Make x the subject of $y = \dfrac{x+4}{x-1}$. (3 marks)
b. Make t the subject of $v = u + at$ and then find t when $v = 20$, $u = 5$, $a = 2.5$. (1 mark)