

Delta 1

Unit 3 Review (Non-Calculator)

Equations, Functions & Formulae

How well did you do:

Equations, Functions & Formulae	Score = $\frac{\quad}{48}$	
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Topics/skills which need to be revisited:	Questions from the review	Further Practice from Delta 1
<ul style="list-style-type: none"> Simplify algebraic expressions by collecting like terms Simplify algebraic expressions, which contain powers, by collecting like terms Understand the difference between $4y$ and y^4 	<ul style="list-style-type: none"> 7,9 12 15 	<ul style="list-style-type: none"> P71 Q2 P72 Q11 P71 Q1, P72 Q6
<ul style="list-style-type: none"> Writing an algebraic expression based on a geometric drawing Writing an algebraic expression based on some worded information Writing an algebraic expression based on a logic diagram 	<ul style="list-style-type: none"> 2 3,4,6 10 	<ul style="list-style-type: none"> P70 Q23 P74 Q9a P74 Q3
<ul style="list-style-type: none"> Substituting positive numbers into a formula Substituting negative numbers into a formula 	<ul style="list-style-type: none"> 1a,5,13 1b 	<ul style="list-style-type: none"> P73 Q1,2,5 P73 Q6
<ul style="list-style-type: none"> Writing a formula based on some worded information 	<ul style="list-style-type: none"> 14 	<ul style="list-style-type: none"> P74 Q2,4,5,7
<ul style="list-style-type: none"> Substituting positive numbers into a formula which contains powers Expand a single bracket 	<ul style="list-style-type: none"> 8 11,16 	<ul style="list-style-type: none"> P73 Q7 P71 Q4, P72 Q9
<ul style="list-style-type: none"> Factorise an expression into one bracket 	<ul style="list-style-type: none"> 17 	<ul style="list-style-type: none"> P72 Q12,13

1 Use the formula $y = mx + c$ to work out the value of y . Show your working clearly.

a when $m = 8, x = 3, c = 4$

..... (2)

b when $m = -2, x = -5, c = -5$

..... (2)
 (Total 4 marks)



The diagram shows a strip of wood ABCDE.

$AB = BC = CD = x$ cm

DE is twice the length of CD.

Express the total length, AE, in terms of x . Give your final answer in its simplest form.

.....cm
 (Total 2 marks)

3 Bill is h cm tall. Sienna is 4 cm taller than Bill.

Write down an expression in terms of h for Sienna's height in centimetres.

.....cm
 (Total 1 mark)

4 A bag of sugar has a mass of 2 kg.

a Write down an expression in terms of n for the total mass in kilograms of n bags of sugar.

.....kg (1)

b Write down an expression in terms of n for the total mass in grams of n bags of sugar.

.....g (2)
(Total 3 marks)

5 Annie uses this formula to work out her total pay, £ T , each week.

$$T = RH$$

£ R is her pay for one hour's work. H is the number of hours she works.

Show your working clearly to find T :

a when $R = 10$ and $H = 40$

£..... (2)

b when $R = 15$ and $H = 7$

£..... (2)
(Total 4 marks)

6 Pens cost x pence each. Rulers cost y pence each.

Hassan buys 3 pens and 2 rulers.

Write an expression for the total amount, in pence, which Hassan spends.

.....
(Total 2 marks)

7 Simplify, by collecting like terms.

a $4x + 5x - x$

..... (1)

b $-2p + 5p - p$

..... (1)
(Total 2 marks)

8 $A = 2x^2$

Work out the value of A when $x = 4$. Show your working clearly.

.....
(Total 2 marks)

9 Simplify, by collecting like terms.

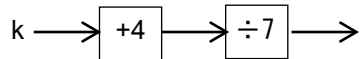
a $4x + 5y - x - 3y$

..... (2)

b $-2p + 5q - p + q$

..... (2)
(Total 4 marks)

10 Write an expression for the output of this function machine:



.....
(Total 1 mark)

11 Expand

a $4(x + 3)$

..... (2)

b $x(x + 3)$

..... (2)
(Total 4 marks)

12 Simplify by collecting like terms $r^2 + 5r + 3r^2 - 2r$

.....
(Total 2 marks)

13 The formula for converting between Fahrenheit (F) and Celsius (C) is:

$$C = \frac{5(F-32)}{9}$$

Convert 50°F into Celsius, showing your working clearly.

.....
(Total 3 marks)

14 The cooking time for a joint of meat is 40 minutes per kg plus an extra 15 minutes.

Write down a formula that connects the cooking time in minutes, **C**, to the mass in kg, **m**.

.....
(Total 3 marks)

15 Write the expanded, longer version of:

a y^4

..... (1)

b $4y$

..... (1)
(Total 2 marks)

16 a Expand $3k(2k + 4)$

..... (2)

b Find the value of $3k(2k + 4)$ when $k = 2$. Show your working clearly.

..... (3)
(Total 5 marks)

17 Factorise fully

a $5x + 20$

..... (2)

b $16x - 20 + 32y$

..... (2)
(Total 4 marks)

[End of Review]