Multiple-choice section – choose the correct answer

Question 1 [3.1]

How many terms are in the expression *x* + 2*y* + 8*z* – 9?

A 2 B 4 C 7 D 10

Question 2 [3.1]

What is the constant in the expression *x* + 2*y* + 8*z* – 9?

A 1 B 2 C 8 D -9

Question 3 [3.2]

If *x* = 7 and *y* = 11, evaluate 2*x* + 5*y*.

A 7 B 25 C 69 D 770

Question 4 [3.2]

If *a* = 5 and *b* = -1, then *a*2 – 2*b* is equal to:

A 8 B 12 C 23 D 27

Question 5 [3.3]

If *l* = 15 and *w* = 6 are substituted into the formula *P =* 2*l* + 2*w*, then *P* is equal to*:*

A 21 B 42 C 84 D 360

Question 6 [3.4]

Simplify 8*x* + 2*y* – 15*x* – 7*y*.

A 23*x* + 9*y* B 23*x* – 9*y* C -7*x* + 5*y* D -7*x* – 9*y*

Question 7 [3.5]

Simplify 5*x* × 2*y* × -4*z*.

A --11*xyz* B -40*xyz* C 11*xyz* D 40*xyz*

Question 8 [3.5]

Simplify 36*p* ÷ 9*pqr*.

A 4*qr* B  C  D 

Question 9 [3.6]

Expand and simplify 5(2*x* + *y*) – 15*x*.

A 10*x* + *y* – 15*x* B 10*x* + 5*y* – 15*x* C -5*x* + *y* D -5*x* + 5*y*

Question 10 [3.7]

What is 4*y* – 16*x* in fully factorised form?

A -4(*y* – 4*x*) B -4(4*y* + *x*) C 4(*y* – 4*x*) D 4(4*y* + *x*)

Multiple-choice results: \_\_\_ / 10

Short answer section

Question 11 3 marks

Choose the correct word from the following list to fill the gaps in the following sentences.

*like terms coefficient factorising expanding constant formulas*

(a) 2*x* and 5*x* are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

(b) Using the distributive law to write an expression without brackets is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ an expression.

(c) Writing an expression with a common factor and brackets is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
an expression.

Question 12 7 marks [3.1, 3.4]

For each of the following expressions:

(i) write the coefficient of *x*

(ii) state if it can be simplified, and if it can, then simplify the expression.

(a) 6*x* + 21*y* – 5*z* (b) 15*y* – 8*x* + *x*2 (c) 5*x*2 – 7*x* + 19*xy* – 8*x*2

Question 13 2 marks [3.1]

A variety store has *n* DVDs for sale.

(a) If *m* DVDs have been sold, write an expression in terms of *m* and *n* to show the number of DVDs that the store still has.

(b) If three more DVDs are sold, write an expression in terms of *m* and *n* for the total number of DVDs the store has now sold.

Question 14 6 marks [3.2]

Evaluate these expressions, if *a* = 4 and *b* = 7.

(a) *a* + 5*b* (b) 5*ab* – 2*a* (c) 

Question 15 3 marks [3.3]

Taxi fares are calculated using the formula *C* = 1.2*x* + 3, where *C* is the cost of the fare in dollars and *x* is the distance travelled in kilometres.

(a) What is the cost of travelling 20 km?

(b) If you have $51, then how far can you travel by taxi?

Question 16 3 marks [3.4]

Simplify these expressions, where possible.

(a) 10*a* + 7*a* (b) 8*m* – 16*m* (c) *x* – 4*x* + 8*x*

Question 17 3 marks [3.5]

Simplify the following.

(a) 12 × 7*b* (b) -5*a* × -9*b* (c) 

Question 18 6 marks [3.6]

Expand each of the following expressions.

(a) 3(*x* + 8) (b) 2(7*y* – 4) (c) -5(*b* + 2*c*)

Question 19 6 marks [3.7]

Factorise the following expressions.

(a) 6*h* − 72 (b) 8*a* – 96b (c) -9*k* – 63

Short answer results: \_\_\_ / 39

Extended answer section

Question 20 6 marks [3.1, 3.2, 3.4, 3.7]

The cost of hiring a bicycle from shop A is a $11 fee plus a charge of $1.50 per hour.

(a) Write a rule for the cost, $*C*, of hiring a bicycle from shop A for *h* hours.

(b) Use the rule to complete the following table of reference for the shopkeeper.

|  |  |  |  |
| --- | --- | --- | --- |
| *h* (hours) | 0.5 | 1 | 2 |
| *C* ($) |  |  |  |

(c) Shop B also hires out bicycles, but with a different rule: *C* = 9 + 2.5*h*. Shaun hires 2 bicycles, one from shop A and another from shop B. Write an expression for the total cost he has to pay for both bicycles in terms of *C* and *h* and then simplify it.

(d) Factorise the expression from (c).

Question 21 3 marks [3.1]

Nilo is one third the age of her brother, Omar.

(a) If Nilo is *n* years old:

(i) write an expression in terms of *n* to show how old Omar is now

(ii) write an expression in terms of *n* to show how old Omar will be in three years’ time.

(b) In three years’ time, Nilo will be half her brother’s age. Write another expression in terms of *n* to show this information.

Question 22 5 marks [3.1, 3.6, 3.7]

The area of a rectangle = length × width. A rectangle is 8 cm longer than it is wide.

(a) Write an expression for the area of the rectangle if its width is *x* cm.

(b) If the length is doubled, write an expression in terms of *x* for the area of the enlarged rectangle.

(c) What is the increase in the area of the rectangle, in terms of *x*?

(d) Factorise your answer in (c).

(e) Comment on the increased area.

Extended answer results: \_\_\_ / 14

TOTAL test results: \_\_\_ / 63