Multiple-choice section – choose the correct answer

Question 1 [3.1]

How many terms are in the expression 2*x* + 4*y* + 7*z* – 6?

A 2 B 4 C 7 D 10

Question 2 [3.1]

What is the constant in the expression 2*x* + 4*y* + 7*z* – 6?

A 2 B 4 C 7 D -6

Question 3 [3.2]

If *x* = 2 and *y* = 5, evaluate 3*x* + 8*y*.

A 18 B 19 C 46 D 240

Question 4 [3.2]

If *a* = 3 and *b* = 2, then *a*2 – 2*b* is equal to:

A 2 B 5 C 36 D 78

Question 5 [3.3]

If *l* = 20 and *w* = 7 are substituted into the formula *P =* 2*l* + 2*w*, then *P* is equal to*:*

A 27 B 54 C 108 D 560

Question 6 [3.4]

Simplify 3*x* + 7*y* – 12*x* – 5*y*.

A 15*x* + 2*y* B 15*x* – 2*y* C -9*x* + 2*y* D -9*x* – 2*y*

Question 7 [3.5]

Simplify 4*x* × 3*y* × -2*z*.

A -24*xyz* B -12*xyz* C 5*xyz* D 24*xyz*

Question 8 [3.5]

Simplify 24*g* ÷ 8*gf*.

A 3*f* B  C  D 

Question 9 [3.6]

Expand and simplify 9(*x* + 2*y*) – 12*x*.

A 9*x* + 2*y* – 12*x* B 9*x* + 18*y* – 12*x* C -3*x* + 2*y* D -3*x* + 18*y*

Question 10 [3.7]

What is 25*y* – 5*x* in fully factorised form?

A -5(5*y* – *x*) B -5(5*y* + *x*) C 5(5*y* – *x*) D 5(5*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) 3*a* and 5*a* 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) 12*x* + 2*y* – 9*z* (b) 5*y* – 4*x* + 8*x*2 (c) 19*x*2 – 2*x* + 4*xy* – 3*x*2

Question 13 2 marks [3.1]

A variety store has *v* DVDs for sale.

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

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

Question 14 6 marks [3.2]

Evaluate these expressions, if *a* = 2 and *b* = 5.

(a) 2*a* + 3*b* (b) 3*ab* – 7*a* (c) 

Question 15 3 marks [3.3]

Taxi fares are calculated using the formula *C* = 1.8*x* + 5, 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 25 km?

(b) If you have $41, then how far can you travel by taxi?

Question 16 3 marks [3.4]

Simplify these expressions, where possible.

(a) 4*a* + 6*a* (b) 5*m* – 2*m* (c) 3*x* – 4*x* + 7*x*

Question 17 3 marks [3.5]

Simplify the following.

(a) 15 × 4*b* (b) -7*a* × 4*b* (c) 

Question 18 6 marks [3.6]

Expand each of the following expressions.

(a) 4(*x* + 6) (b) 2(3*w* – 2) (c) -3(*b* + *c*)

Question 19 6 marks [3.7]

Factorise the following expressions.

(a) 6*h* − 18 (b) 5*m* − 25*n* (c) -3*k* + 24

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 $10 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* = 8 + 2.5*h*. Ming 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 five years’ time.

(b) In five 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 5 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