Multiple-choice section – choose the correct answer

Question 1 [3.1]

The coefficient of *drg* in -7*drg* – 5*dg* is:

A -7 B -5 C 5 D 7

Question 2 [3.2]

If *y* = , find *y* where *x* = -and *z* = .

A - B - C - D -

Question 3 [3.2]

If *a* = -3 and *b* = 2, then 3*a*2*b* – 4*ab*2 is equal to:

A -90 B -6 C 102 D 198

Question 4 [3.3]

The formula to calculate the period, *T*, of a pendulum is given by *T* = 2π, where π and *g* are constants (π =  and *g* = 10), and *l* is the length of the pendulum. Find *T* For *l* = 490.

A  B 22 C 44 D 308

Question 5 [3.4]

Simplify: 2*x*3 – 3*xy* + *xy* + 5*x*2 – *x*3

A 5*x*2 – 1 B 6*x*2 – 3 C 2*x*3 + 2*xy* + 5*x*2 D *x*3 – 2*xy* + 5*x*2

Question 6 [3.5]

Simplify: -8*a* × 3*b* × -2*c* + 5*a* × 2*ab*

A -48*abc* + 10*a*2*b* B -13*abc* + 10*a*2*b* C -7*abc* + 10*ab* D 48*abc* + 10*a*2*b*

Question 7 [3.5]

Simplify: 63*xy*2 ÷ (-9*xy*) × 4*yz*

A -28*y*2*z* B -28*xyz* C -28*xy*2*z* D -

Question 8 [3.6]

Expand and simplify: -2*x*(4 + *r*) – 5(2*r −* 8*x*)

A -32*x* – 2*xr* – 10*r* B -32*x* + 2*xr* – 10*r* C 32*x* + 2*xr* – 10*r* D 32*x* – 2*xr* – 10*r*

Question 9 [3.6]

When the expression 5*g*2(3 − 6*h*) *+* 3(*g*2 *–* 7*h*)is expanded and simplified it becomes:

A  B  C  D 

Question 10 [3.7]

-25*y* + 60*xy* + 35*x*2yfully factorised is equal to:

A -5*y*(5 – 12*x* – 7*x*2) B -5*y*(5*y* + 12*x* + 7*x*2) C -5*y*(5 + 12*x* – 7*x*2) D 5*y*(5 + 12*x* + 7*x*2)

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) When 3*a* − 4*b* + 5*a* + 6*b* is simplified to 8*a* + 2*b*, this is called collecting \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

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

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

Question 12 2 marks [3.1, 3.7]

(a) Write an expression that has at least three terms. One term must contain two variables multiplied together. Include a constant. One of the terms must have a coefficient of -9.

(b) Write an expression that can be factorised and factorise it.

Question 13 3 marks [3.2]

Reece has answered the question below in a maths test, but he has made a mistake. Circle the error and write the correct solution.

Substitute *a* = -3 and *b* = -5 into the expression 4*ab* – 5*a*.

Reece’s working

4*ab* – 5*a*

= 4 × -3 × -5 – 5 × -3

= 60 – 15

= 45

Question 14 5 marks [3.2]

If *a* = 3, *b* = 4 and *c* = - 2, evaluate each of the following:

(a)  (b) 

Question 15 5 marks [3.3]

A patchwork quilt is made with 400 rectangles. Each rectangle has a width that is 3 cm less than   
its length.

(a) If the area of a rectangle is given by the formula *A* = *L × W*, where *L* is the length and *W* is the width, write an expression for the total area covered by the quilt. Give your answer in terms of *L*, in expanded form.

(b) If *L* = 12 cm, find the total area covered by the quilt.

Question 16 4 marks [3.4]

Simplify these expressions, where possible.

(a) 8*r* – 9*r* – 5*r*2 + 3 (b) 6*kp* – 4 + 4*k* – 6*p*

(c) 12*x*3 + 2*xy* – 5*x*2 – (2*x*2 + 19*x*3)

Question 17 5 marks [3.5]

Simplify each of the following.

(a) -5 × 3*m* × 5 – *m* (b) 

(c) 

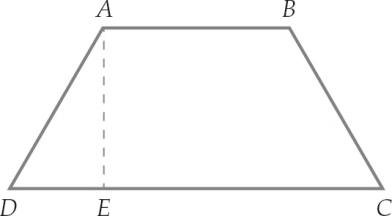
Question 18 7 marks [3.6]

Expand each of the following expressions. Give the answer in simplest terms.

(a) -3*p*(7*r* – 5) (b) 6*x*(*y* + 2) – 4*y*(*x +* 2)

(c) [16*x* –(6*x* – 12)]

Question 19 4 marks [3.6]

*ABCD* is a trapezium and E is a point on *CD* such that *AE* is perpendicular to *CD*.   


Given that *CD* = (*x* + 4) cm, *AE* = *x* cm, *AB* = (2*x* – 4) cm and the area of the trapezium is 24 cm2:

(a) form an equation in terms of *x* for the area of the trapezium

(b) suggest a value for the length *AE*.

Question 20 6 marks [3.7]

Factorise the following expressions.

(a) 42*b*2*c*– 28*bc*2 (b) -8*bcd* + 12*b*3*c*2*d* (c) 3*t*(2*t* – 5) – 5(2*t* – 5)

Short answer results: \_\_\_ / 44

Extended answer section

Question 21 7 marks [3.1, 3.4, 3.7]

Rob has some money in his bank account. His sister, Suri, has three times as much money in her bank account.

(a) If Rob has $*r* in his account initially:

(i) write an expression in terms of *r* to show how much money Suri has initially

(ii) write an expression in terms of *r* to show how much money Rob and Suri have together initially.

(b) They each spend $25 buying a present for their mother. Write an expression in terms of *r* to show how much money Rob and Suri have left altogether after buying the present.

(d) Rob washes his neighbour’s car and is paid exactly the amount Suri now has in the bank.  
Write an expression in terms of *r* to show how much money Rob has after he has washed his neighbour’s car.

(e) Suri works a shift at the local supermarket and is paid the amount she had in the bank initially. Write an expression in terms of *r* to show how much Suri has after she has worked the shift.

(f) Write an expression in simplest expanded form in terms of *r* to show how much money they now have altogether.

(g) Factorise this expression.

Question 22 8 marks [3.6, 3.7]

The area of a rectangle = length × width. A rectangle is 12 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 tripled and the width is halved, write an expression in terms of *x* to calculate the area of the enlarged rectangle. Simplify the expression.

(c) Write an expression in terms of *x* to show the increase in area. Simplify.

(d) Factorise your answer.

(e) Comment on the increased area.

Question 23 7 marks [3.2, 3.6]

Alpha City is *x* km away from Beta City. Alicia took 20 minutes to travel from Alpha to Beta at a uniform speed. From Beta city, she took 15 minutes to travel (*x* + 5)km to Gamma city, travelling at a different uniform speed.

(a) If the difference between her two speeds is 28 km/h, express in terms of *x*:

(i) the uniform speed at which Alicia travelled from Alpha to Beta

(ii) the uniform speed at which Alicia travelled from Beta to Gamma.

(b) Suggest a value for *x* and hence find the total distance travelled by Alicia.

Extended answer results: \_\_\_ / 22

TOTAL test results: \_\_\_ / 76