Multiple-choice section

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Question | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Answer | B | D | C | D | B | D | B | C | D | C |

Question 1 [3.1]

B

Look for the parts separated by addition, subtraction or equals signs. The terms are *x*, 2*y*, 8*z*

and -9.

Question 2 [3.1]

D

Look for the number by itself. The constant is -9.

Question 3 [3.2]

C

2 × 7 + 5 × 11 = 69

Question 4 [3.2]

D

52 – 2(-1) = 25 + 2 = 27

Question 5 [3.3]

B

2 × 15 + 2 × 6 = 30 + 12 = 42

Question 6 [3.4]

D

8*x* + 2*y* – 15*x* – 7*y* = 8*x* – 15*x* + 2*y* – 7*y*

= -7*x* – 5*y*

Question 7 [3.5]

B

Question 8 [3.5]

C

Question 9 [3.6]

D

5(2*x* + *y*) – 15*x* = 10*x* + 5*y* – 15*x*

= -5*x* + 5*y*

Question 10 [3.7]

C

Multiple-choice total marks: 10

Short answer section

Question 11 3 marks

(a) 2*x* and 5*x* are *like terms*.

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

(c) Writing an expression with a common factor and brackets is called *factorising*  
an expression.

Question 12 7 marks [3.1, 3.4]

(a) (i) Look for the number beside *x*. The coefficient is 6.

(ii) No. There are no like terms.

(b) (i) Look for the number beside *x*. The coefficient is -8.

(ii) No. There are no like terms.

(c) (i) Look for the number beside *x*. The coefficient is -7.

(ii) Yes  
5*x*2 – 7*x* + 19*xy* – 8*x*2 = 5*x*2 – 8*x*2 – 7*x* + 19*xy* = -3*x*2 – 7*x* + 19*xy*

Question 13 2 marks [3.1]

|  |  |
| --- | --- |
| (a) *n* – *m* | (b) *n* – *m* – 3 |

Question 14 6 marks [3.2]

|  |  |  |
| --- | --- | --- |
| (a) *a* + 5*b* = 4 + 5 × 7 = 4 + 35 = 39 | (b) 5*ab* – 2*a*  = 5 × 4 × 7 – 2 × 4 = 140 – 8 = 132 | (c)  =  =  = 12 |

Question 15 3 marks [3.3]

(a) *C* = 1.2 × 20 + 3 = $27

(b) By trial and error:  
Substitute *x* = 10, *C* = 1.2 × 10 + 3 = $15  
Substitute *x* = 20, *C* = 1.2 × 20 + 3 = $27  
Substitute *x* = 30, *C* = 1.2 × 30 + 3 = $39  
Substitute *x* = 40, *C* = 1.2 × 40 + 3 = $51, so you can travel 40 km.

Question 16 3 marks [3.4]

|  |  |  |
| --- | --- | --- |
| (a) 10*a* + 7*a* = 17*a* | (b) 8*m* – 16*m* = -8*m* | (c) *x* – 4*x* + 8*x*  *=* -3*x +* 8*x* = 5*x* |

Question 17 3 marks [3.5]

|  |  |  |
| --- | --- | --- |
| (a) 12 × 7*b* = 84*b* | (b) -5*a* × -9*b* = 45*ab* | (c) = 4*q* |

Question 18 6 marks [3.6]

|  |  |  |
| --- | --- | --- |
| (a) 3(*x* + 8)  = 3 × *x* + 3 × 8 = 3*x* + 24 | (b) 2(7*y* – 4)  = 2 × 7*y* – 2 × 4 = 14*y* – 8 | (c) -5(*b* + 2*c*) = -5 × *b* – 5 × 2*c*  = -5*b* – 10*c* |

Question 19 6 marks [3.7]

|  |  |  |
| --- | --- | --- |
| (a) 6*h* – 72 = 2 × 3 × *h* – 2 × 2 × 2 × 3 × 3  = 6(*h* − 12) | (b) 8*a* – 96*b* = 2 × 2 × 2 × *a* – 2 × 2 × 2 × 2 × 2 × 3 × *b*  = 8(*a* – 12*b*) | (c) -9*k* – 63  = -3 × 3 × *k* – -3 × 3 × 7 = -9(*k* + 7) |

Short answer total marks: 39

Extended answer section

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

(a) *C* = 11 + 1.5 × *h* = 11 + 1.5*h*

(b) *C* = 11 + 1.5 × 0.5 = 11.75  
*C* = 11 + 1.5 × 1 = 12.50  
*C* = 11 + 1.5 × 2 = 14

(c) *C* = 11 + 1.5*h* + 9 + 2.5*h*  = 20 + 4*h*

(d) 20 + 4*h* = 2 × 2 × 5 + 2 × 2 × *h* = 4(5 + *h*)

Question 21 3 marks [3.1]

|  |  |  |
| --- | --- | --- |
| (a) 3*n* | (b) 3*n* + 3 | (c) |

Question 22 5 marks [3.1, 3.6, 3.7]

(a) *L* = (*x* + 8) cm, *W* = *x* cm *A* = *x*(*x* + 8) cm2  
= *x*2 + 8*x*

(b) *L* = 2(*x* + 8) cm, *W* = *x* cm  
*A* = 2(*x* + 8) × *x* = 2*x*(*x* + 8)  
 = (2*x*2 + 16*x*) cm2

(c) Area increase = 2*x*2 + 16*x* – (*x*2 + 8*x*)  
 = 2*x*2 + 16*x* – *x*2 – 8*x* = *x*2 + 8*x*

(d) *x*(*x* + 8)

(e) The increase in area is the same as the area of the original rectangle.

Extended answer total marks: 14

TOTAL test marks: 63