Multiple-choice section

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

Question 1 [3.1]

B

Look for the parts separated by addition, subtraction or equals signs. The terms are 2*x*, 4*y*, 7*z*

and -6.

Question 2 [3.1]

D

Look for the number by itself. The constant is -6.

Question 3 [3.2]

C

3 × 2 + 8 × 5 = 46

Question 4 [3.2]

B

32 – 2(2) = 9 – 4 = 5

Question 5 [3.3]

B

2 × 20 + 2 × 7 = 40 + 14 = 54

Question 6 [3.4]

C

3*x* + 7*y* – 12*x* – 5*y* = 3*x* – 12*x* + 7*y* – 5*y* = -9*x* + 2*y*

Question 7 [3.5]

A

Question 8 [3.5]

B

Question 9 [3.6]

D

9(*x* + 2*y*) – 12*x* = 9 × *x* + 9 × 2*y* – 12*x*   
 = 9*x* + 18*y* – 12*x* = -3*x* + 18*y*

Question 10 [3.7]

C

Multiple-choice total marks: 10

Short answer section

Question 11 3 marks

(a) 3*a* and 5*a* are *like terms*.

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

(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 12.

(ii) No. There are no like terms.

(b) (i) Look for the number beside *x*. The coefficient is -4.

(ii) No. There are no like terms.

(c) (i) Look for the number beside *x*. The coefficient is -2.

(ii) Yes  
19*x*2 – 2*x* + 4*xy* – 3*x*2 = 19*x*2 – 3*x*2 – 2*x* + 4*xy* = 16*x*2 – 2*x* + 4*xy*

Question 13 2 marks [3.1]

|  |  |
| --- | --- |
| (a) *v* – *u* | (b) *v* – *u* – 5 |

Question 14 6 marks [3.2]

|  |  |  |
| --- | --- | --- |
| (a) 2*a* + 3*b*  = 2 × 2 + 3 × 5  = 4 + 15  = 19 | (b) 3*ab* – 7*a*  = 3 × 2 × 5 – 7 × 2 = 30 – 14 = 16 | (c)  =  = 8 |

Question 15 3 marks [3.3]

(a) *C* = 1.8 × 25 + 5 = $50

(b) By trial and error:  
Substitute *x* = 10, *C* = 1.8 × 10 + 5 = $23  
Substitute *x* = 15, *C* = 1.8 × 15 + 5 = $32  
Substitute *x* = 20, *C* = 1.8 × 20 + 5 = $41, therefore you can travel 20 km.

Question 16 3 marks [3.4]

|  |  |  |
| --- | --- | --- |
| (a) 4*a* + 6*a*  = 10*a* | (b) 5*m* – 2*m*  = 3*m* | (c) 3*x* – 4*x* + 7*x*  *=* -*x +* 7*x* = 6*x* |

Question 17 3 marks [3.5]

|  |  |  |
| --- | --- | --- |
| (a) 15 × 4*b* = 60*b* | (b) -7*a* × 4*b* = -28*ab* | (c) = 5 |

Question 18 6 marks [3.6]

|  |  |  |
| --- | --- | --- |
| (a) 4(*x* + 6)  = 4 × *x* + 4 × 6 = 4*x* + 24 | (b) 2(3*w* – 2)  = 2 × 3*w* – 2 × 2 = 6*w* – 4 | (c) -3(*b* + *c*) = -3 × *b* – 3 × *c*  = -3*b* – 3*c* |

Question 19 6 marks [3.7]

|  |  |  |
| --- | --- | --- |
| (a) 6*h* – 18 = 2 × 3 × *h* – 2 × 3 × 3 = 6(*h* − 3) | (b) 5*m* – 25*n*  = 5 × *m* – 5 × 5 × *n*  = 5(*m* – 5*n*) | (c) -3*k* + 24 = -3 × *k* – -3 × 8 = -3(*k* – 8) |

Short answer total marks: 39

Extended answer section

Question 20 6 marks [3.1, 3.3, 3.4, 3.7]

(a) *C* = 10 + 1.5 × *h* = 10 + 1.5*h*

(b) *C* = 10 + 1.5 × 0.5 = 10.75  
*C* = 10 + 1.5 × 1 = 11.50  
*C* = 10 + 1.5 × 2 = 13

(c) *C* = 10 + 1.5*h* + 8 + 2.5*h*  = 18 + 4*h*

(d) 18 + 4*h* = 2 × 3 × 3 + 2 × 2 × *h* = 2(9 + 2*h*)

Question 21 3 marks [3.1]

|  |  |  |
| --- | --- | --- |
| (a) 3*n* | (b) 3*n* + 5 | (c) |

Question 22 5 marks [3.1, 3.6, 3.7]

(a) *L* = (*x* + 5) cm, *W* = *x* cm *A* = *x*(*x* + 5) cm2  
= (*x*2 + 5*x*) cm2

(b) *L* = 2(*x* + 5) cm, *W* = *x* cm  
*A* = 2(*x* + 5) × *x* = 2*x*(*x* + 5)  
 = (2*x*2 + 10*x*) cm2

(c) Area increase = 2*x*2 + 10*x* – (*x*2 + 5*x*)  
 = 2*x*2 + 10*x* – *x*2 – 5*x* = *x*2 + 5*x*

(d) *x*(*x* + 5)

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

Extended answer total marks: 14

TOTAL test marks: 63