

Questions

Q1.

(a) Simplify $9x^2 + 2x^2 - 5x^2$

.....
(1)

$$e = 2f - 5g$$

(b) Find the value of e when $f = 12$ and $g = 3$

$e =$
(2)

$$e = 2f - 5g$$

(c) Find the value of f when $e = 8$ and $g = -6$

$f =$
(3)

(Total for question = 6 marks)

Q2.

(a) Simplify $4x + 3x$

.....
(1)

(b) Simplify $5 \times 3y$

.....
(1)

$$f = 5p - 4v$$

(c) (i) $p = -4, v = 3$

Work out the value of f .

$f = \dots\dots\dots$

(ii) $f = -22, v = -5$

Work out the value of p .

$p = \dots\dots\dots$

(5)

(Total for Question is 7 marks)

Q3.

(a) Solve $4y - 13 = -7$

$y = \dots\dots\dots$

(2)

(b) Expand $5(h + 7)$

$\dots\dots\dots$

(1)

$T = 4a - 7b$

(c) Work out the value of T when $a = 3$ and $b = 2$

$T = \dots\dots\dots$

(2)

(Total for question = 5 marks)

Q4.

(a) Expand $5(2p - 3)$

$\dots\dots\dots$

(1)

(b) Expand and simplify fully $(n + 8)(n - 5)$

.....

(2)

(c) $y = x^3 - kx + 5$

Work out the value of k when $y = 6$ and $x = -2$

$k =$

(3)

(Total for question = 6 marks)

Q5.

(a) Expand and simplify $4(2d + 3) - 2(3d - 5)$

.....

(2)

$P = 5g + h^2$

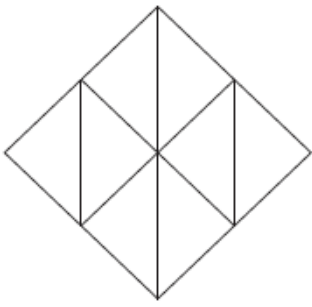
(b) Find the value of P when $g = 3$ and $h = -4$

$P =$

(2)

(Total for question = 4 marks)

Q6.



(a) Shade $\frac{1}{4}$ of the shape.

(1)

(b) Write 40% as a decimal.

.....

(1)

$$B = 6e - 3f$$

(c) Work out the value of B when $e = 3.2$ and $f = -4$

.....

(2)

(Total for question = 4 marks)

Q7.

(a) Simplify $p + p + p + p - p$

.....

(1)

(b) Simplify $6 \times e \times 5 \times f$

.....

(1)

(c) Solve $8m = 40$

$m =$

(1)

(d) Solve $20 - k = 16$

$k = \dots\dots\dots$
(1)

$$a = 3c + f$$

(e) Work out the value of c when $a = 23$ and $f = 5$

$c = \dots\dots\dots$
(3)

(Total for question = 7 marks)

Q8.

(a) Simplify $2m + 5m$

$\dots\dots\dots$
(1)

(b) Simplify $6x - x$

$\dots\dots\dots$
(1)

(c) Simplify $6 \times 2y$

$\dots\dots\dots$
(1)

$$t = 4k + 9$$

$$k = 2$$

(d) Work out the value of t .

$t = \dots\dots\dots$
(1)

$$p = 2n^2$$

$$n = 3$$

(e) Work out the value of p .

$$p = \dots\dots\dots$$

(1)

(Total for question = 5 marks)

Q9.

(a) Solve $4e = 20$

$$e = \dots\dots\dots$$

(1)

(b) Solve $15 - f = 9$

$$f = \dots\dots\dots$$

(1)

(c) Simplify $5m + 4p - 2m + 7p$

$$\dots\dots\dots$$

(2)

There are 4 pens in each small box of pens.
There are 10 pens in each large box of pens.

Harry buys x small boxes of pens and y large boxes of pens.

(d) Write down an expression, in terms of x and y , for the total number of pens Harry buys.

$$\dots\dots\dots$$

(2)

$$a = -5$$

$$c = -2$$

(e) Work out the value of $2a^2 + 6c$

$$\dots\dots\dots$$

(2)

(Total for question = 8 marks)

Q10.

(a) Solve $3y = 24$

$y = \dots\dots\dots$
(1)

(b) Simplify

(i) $r \times 6 \times t$

$\dots\dots\dots$

(ii) $3m + 7m - 2m$

$\dots\dots\dots$

(iii) $a^3 + a^3$

$\dots\dots\dots$

(3)

(c) $W = 4x + 5y$

Work out the value of W when $x = -2$ and $y = 3$

$W = \dots\dots\dots$
(2)

(Total for question = 6 marks)

Mark Scheme

Q1.

Question	Working	Answer	Mark	Notes
(a)		$6x^2$	1	B1
(b)	Eg $2 \times 12 - 5 \times 3$ or $24 - 15$		2	M1 For a correct substitution
		9		A1
(c)	Eg $8 = 2f - 5 \times -6$ or $8 = 2f - 30$ or $8 = 2f + 30$ or $2f = 8 + 5 \times -6$ or $2f = -22$		3	M1 For a correct substitution or $f = \frac{e+5g}{2}$
	$(f =) \frac{8-30}{2}$ or $\frac{-22}{2}$ or $\frac{8+5 \times -6}{2}$			M1
		-11		A1 SCB2 for -11 embedded
				Total 6 marks

Q2.

Question	Working	Answer	Mark	Notes
(a)		$7x$	1	B1
(b)		$15y$	1	B1
(c)(i)	$5 \times (-4) - 4 \times 3 = -20 - 12$		5	M1 $5 \times (-4) - 4 \times 3$
		-32		A1
(c)(ii)	eg. $-22 = 5 \times p - 4 \times -5$ or $5p = -22 + 4 \times -5$			M1 for correct substitution (must be into a correct equation)
	eg. $-22 = 5p + 20$ or $5p = -22 - 20$ or $p = \frac{-22-20}{5}$			M1 for correct simplification (minimum of $-4 \times -5 = +20$)
		-8.4 oe		A1 (accept $-\frac{42}{5}$ or $-8\frac{2}{5}$ oe)
				Total 7 marks

Q3.

Question	Working	Answer	Mark	Notes
(a)	$4y = -7 + 13$ oe		2	M1
		1.5		A1 oe e.g. 6/4
(b)		$5h + 35$	1	B1 cao
(c)	$4 \times 3 - 7 \times 2$ (12 - 14)		2	M1
		-2		A1

Q4.

The correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method.

Question	Working	Answer	Mark	Notes
(a)		$10p - 15$	1	B1 Accept $10 \times p - 15$
(b)	$n^2 + 8n - 5n - 40$		2	M1 Three correct terms (out of four) or four terms correct except for signs.
		$n^2 + 3n - 40$		A1 Do not isw.
(c)	$6 = (-2)^3 - k(-2) + 5$ or $6 = -8 + 2k + 5$		3	M1 For correct substitution Allow omission of brackets..
	Eg $6 + 8 - 5 = 2k$ or $-2k = -8 + 5 - 6$ or $9 = 2k$ or $-9 = -2k$ or $k = \frac{(-2)^3 - 6 + 5}{-2}$ or $-k = \frac{6 - (-2)^3 - 5}{-2}$ or $-k = -4.5$			M1 For correctly isolating $2k$ or $-2k$ or k or $-k$ in a correct equation.
		4.5		A1 Accept $4\frac{1}{2}, \frac{9}{2}$
				Total 6 marks

Q5.

Question	Working	Answer	Mark	Notes
(a)	$8d + 12 - 6d + 10$		2	M1 3 out of 4 terms correct with signs correct or 4 terms correct ignoring signs
		$2d + 22$		A1 for $2d + 22$ or $2(d + 11)$
(b)	$5 \times 3 + (-4)^2$ oe		2	M1
		31		A1
				Total 4 marks

Q6.

Q	Working	Answer	Mark	Notes
(a)		2 triangles shaded	1	B1
(b)		0.4	1	B1
(c)	$6 \times 3.2 - 3 \times -4$ oe			M1 for a correct substitution or for 19.2 and (-)12 or an answer of 7.2
		31.2	2	A1
				Total 4 marks

Q7.

Question	Working	Answer	Mark	Notes
a		$3p$	1	B1
b		$30ef$	1	B1
c		5	1	B1
d		4	1	B1
e	$23 = 3c + 5$ $23 - 5 = 3c$			M1 for substitution
		6	3	M1 isolating term in c A1
				Total 7 marks

Q8.

Ques	Working	Answer	Mark	Notes
a		$7m$	1	B1
b		$5x$	1	B1
c		$12y$	1	B1
d	$4 \times 2 + 9$	17	1	B1
e	2×3^2	18	1	B1
				Total 5 marks

Q9.

Q	Working	Answer	Mark	Notes
a		5	1	B1
b		6	1	B1
c		$3m + 11p$	2	B2 for $3m + 11p$ as final answer (NB. $3m + 11p = 14mp$ gets B1 only) B1 for $3m$ or $11p$
d		$4x + 10y$	2	B2 for $4x + 10y$ or $2(2x + 5y)$ as final answer (NB. $4x + 10y = 14xy$ gets B1 only) B1 for $4x$ or $10y$
e	$2 \times (-5)^2 + 6 \times -2$ or $2(-5)^2 + 6(-2)$ or 50 and -12			M1
		38	2	A1
				Total 8 marks

Q10.

Question number	Working	Answer	Mark	Notes
(a)		8	1	B1
(b) (i)		$6rt$ oe	1	B1 Do not accept x signs
(ii)		$8m$ oe	1	B1
(iii)		$2a^3$ oe	1	B1
(c)	$-8 + 15$	7	2	M1 M1 for 4×-2 and 5×3 or -8 and 15 A1
				Total 6 marks