

Simplifying algebra
Exam Style Questions

1. Simplify the following

(a) $7x + 2y + 4x + 8y$

$$\dots 11x + 10y \dots (1 \text{ mark})$$

(b) $12a + 2b + 20a + 9b$

$$\dots 32a + 11b \dots (1 \text{ mark})$$

(c) $6 + 2x + 3 + 12x$

$$\dots 14x + 9 \dots (1 \text{ mark})$$

(d) $4a + 4ab + 3ab + b$

$$\dots 4a + 7ab + b \dots (1 \text{ mark})$$

(e) $x^2 + x^2$

$$\dots 2x^2 \dots (1 \text{ mark})$$

(f) $3a^2 + 2a^2$

$$\dots 5a^2 \dots (1 \text{ mark})$$

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(g) $4x^3 + x^2 + 8x^3$

$12x^3 + x^2$ (1 mark)

(h) $5x^6 + y^2 + x^6 + 5y^2$

$6x^6 + 6y^2$ (1 mark)

(i) $-4a + 3b + 2a - 8b + b$

$-2a - 4b$ (1 mark)

(i) $2x - y + 6x - 3y$

$8x - 4y$ (1 mark)

(j) $-20x + 4y - 3x - 4y$

$-23x$ (1 mark)

(k) $11ab - 3ab + 5ac - 9ac$

$8ab - 4ac$ (1 mark)

(l) $4xyz - 8 + 6xyz - 13 - 2xyz$

$8xyz - 21$ (1 mark)

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(m) $-18x - 2y + 3z + x$

$-17x - 2y + 3z$ (1 mark)

(n) $a + a + a + a + a$

$5a$ (1 mark)

2. Simplify the following

(a) $x \times y$

xy (1 mark)

(b) $3a \times 2b$

$6ab$ (1 mark)

(c) $9x \times 3y$

$27xy$ (1 mark)

(d) $x \times x$

x^2 (1 mark)

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(e) $2x \times 3x$

..... $6x^2$ (1 mark)

(f) $-2a \times 5a$

..... $-10a^2$ (1 mark)

(g) $-6x \times -3y$

..... $18xy$ (1 mark)

(h) $2xy \times 3xy$

..... $6x^2y^2$ (1 mark)

(i) $x \times y \times z$

..... xyz (1 mark)

(i) $a \times 3b \times c$

..... $3abc$ (1 mark)

(j) $2x \times 3y \times 4y$

..... $24xy^2$ (1 mark)

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(k) $-x \times -x$

x^2 (1 mark)

(l) $2xy \times 7x$

$14x^2y$ (1 mark)

(m) $abc \times 2a$

$2a^2bc$ (1 mark)

(n) $5s \times -3$

$-15s$ (1 mark)

(n) $a^2 \times a$

a^3 (1 mark)

3. Simplify the following

(a) $\frac{2a}{a}$

..... 2 (1 mark)

(b) $\frac{16x}{20xy}$

..... $\frac{4}{5y}$ (1 mark)

(c) $\frac{15x^2}{x}$

..... 15x (1 mark)

(d) $\frac{30y^3}{3y^2}$

..... 10y (1 mark)

(e) $\frac{x(x+2)}{2x}$

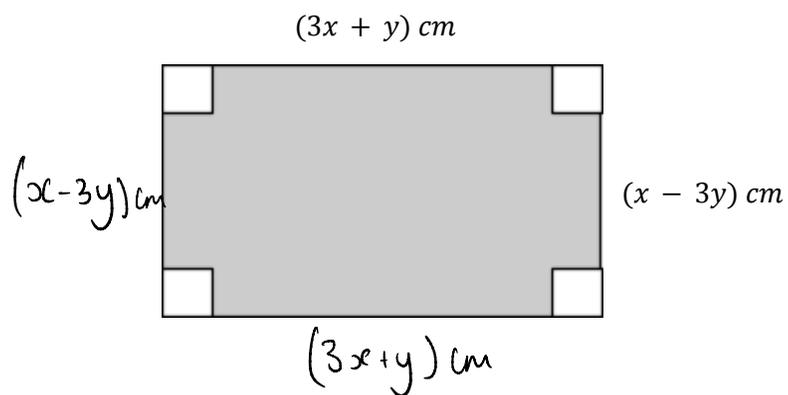
..... $\frac{x+2}{2}$ (1 mark)

(f) $\frac{8abc}{16abd}$

..... $\frac{c}{2d}$ (1 mark)

4. For each of the following shapes, find an expression for the perimeter.
Give your answers in simplest form.

(a)

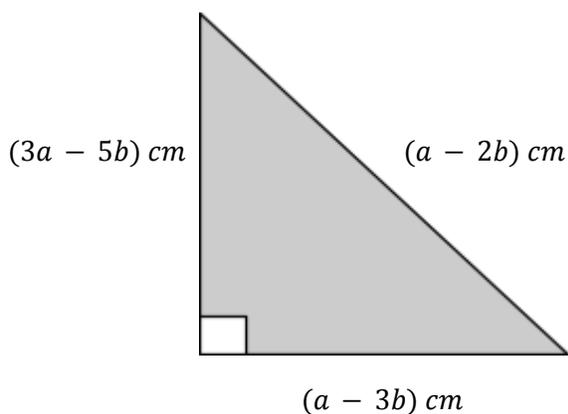


$$3x + y + x - 3y + 3x + y + x - 3y$$

$$= 8x - 4y$$

Perimeter = $8x - 4y$ cm (1)

(b)



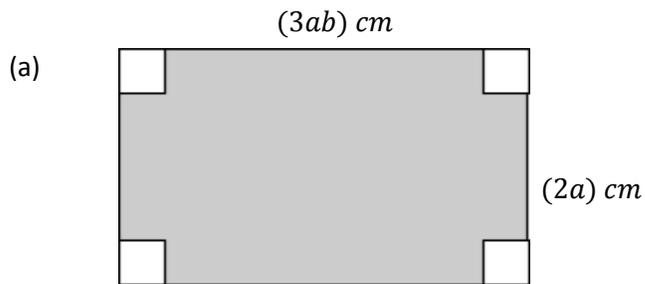
$$3a - 5b + a - 2b + a - 3b$$

$$= 5a - 10b$$

Perimeter = $5a - 10b$ cm (1)

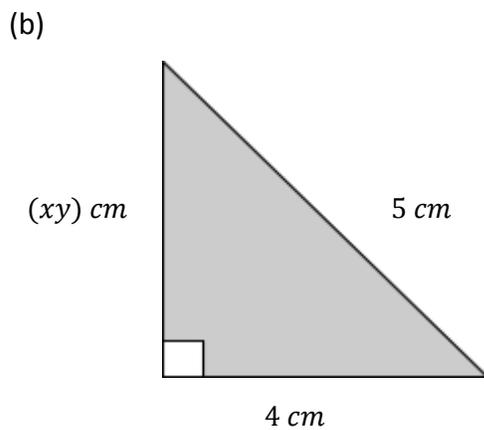
(2 marks)

5. For the following shapes, find an expression for the area.



$$\begin{aligned}
 A &= bh \\
 &= 3ab \times 2a \\
 &= 6a^2b
 \end{aligned}$$

Area = $6a^2b$ cm² (1)



$$\begin{aligned}
 A &= \frac{1}{2}bh \\
 &= \frac{1}{2} \times 4 \times xy = 2xy
 \end{aligned}$$

Area = $2xy$ cm² (1)

(2 marks)
