



Collecting Like Terms Exam Practice

Q1. Simplify the following:

a) $3x + 5x - x$

Answer: 7x
(2 marks)

b) $7x + 5y - 2x + 9y$

$$7x - 2x + 5y + 9y$$
$$5x + 14y$$

Answer: 5x + 14y
(2 marks)

Q2. Simplify the following:

a) $c + c + c$

Answer: 3c
(2 marks)

b) $-8u + 5v - 12u + 9v + 6$

$$-8u - 12u + 5v + 9v + 6$$
$$-20u + 14v + 6$$

Answer: $-20u + 14v + 6$
(2 marks)



Q3. Simplify the following:

a) $3c \times 4d$

Answer: 12cd
(1 mark)

b) $6a \times 5 \times 3b \times 2$

$10 \times 6a \times 3b$
 $180ab$

Answer: 180ab
(2 marks)

Q4. Simplify the following:

a) $4a \times 5b + 7a \times -2b$

$20ab - 14ab$
 $6ab$

Answer: 6ab
(2 marks)

b) $10 \times 3u \times 6 \times 3v \times 2$

$120 \times 3u \times 3v$
 $1080uv$

Answer: 1080uv
(2 marks)



Q5. Simplify the following:

a) $\frac{20p - 8p}{4}$

$$= \frac{12p}{4}$$

$$= 3p$$

Answer: 3p
(2 marks)

b) $\frac{9p - 2q + 17p}{2}$

$$= \frac{26p - 2q}{2}$$

$$= 13p - q$$

Answer: 13p - q
(2 marks)

Q6. Simplify the following expression:

$$4xy + 5x + 7xy - 2x$$

$$4xy + 7xy + 5x - 2x$$

$$11xy + 3x$$

Answer: 11xy + 3x
(2 marks)



Q7. Simplify the following expression:

$$-5a^2 + 8a^2 + a^2$$

Answer: 4a²
(2 marks)

Q8. Simplify the following expression:

$$e^3 + 8f^2 - 1 + 6e^3 - 19f^2 - 13$$

$$e^3 + 6e^3 + 8f^2 - 19f^2 - 1 - 13$$

$$7e^3 - 11f^2 - 14$$

Answer: 7e³ - 11f² - 14
(3 marks)



Q9. Simplify the following expressions fully:

a) $2x + 3xy - 41 - 5y + 12x - 11xy - 12$

$$2x + 12x + 3xy - 11xy - 5y - 41 - 12$$

$$14x - 8xy - 5y - 53$$

Answer: $14x - 8xy - 5y - 53$
(3 marks)

b) $\frac{5x + 2x - 35x}{2x}$

$$= \frac{-28x}{2x}$$

$$= -14$$

Answer: -14
(3 marks)

Applied Mixed Practice Problems

Q10. Alex buys x stamps, Ben buys y stamps and Chad buys $3x$ stamps.
Find an expression for how many stamps they have bought altogether.

$$x + y + 3x$$

$$\Rightarrow 4x + y$$

Answer: $4x + y$
(3 marks)



Q11. Kay buys p pens, Ben buys twice as many pens as Kay, and Rod buys 2 more pens than Ben. Work out an expression for how many pens they have bought altogether.

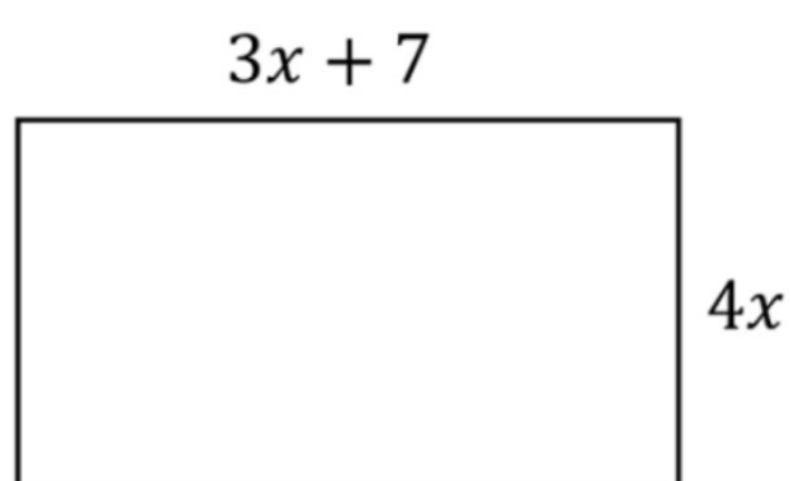
$$p + 2p + (2p + 2)$$

$$5p + 2$$

Answer: 5p + 2
(3 marks)



Q12. Find an expression for the perimeter of the shape below, in terms of x , simplifying your answer fully.

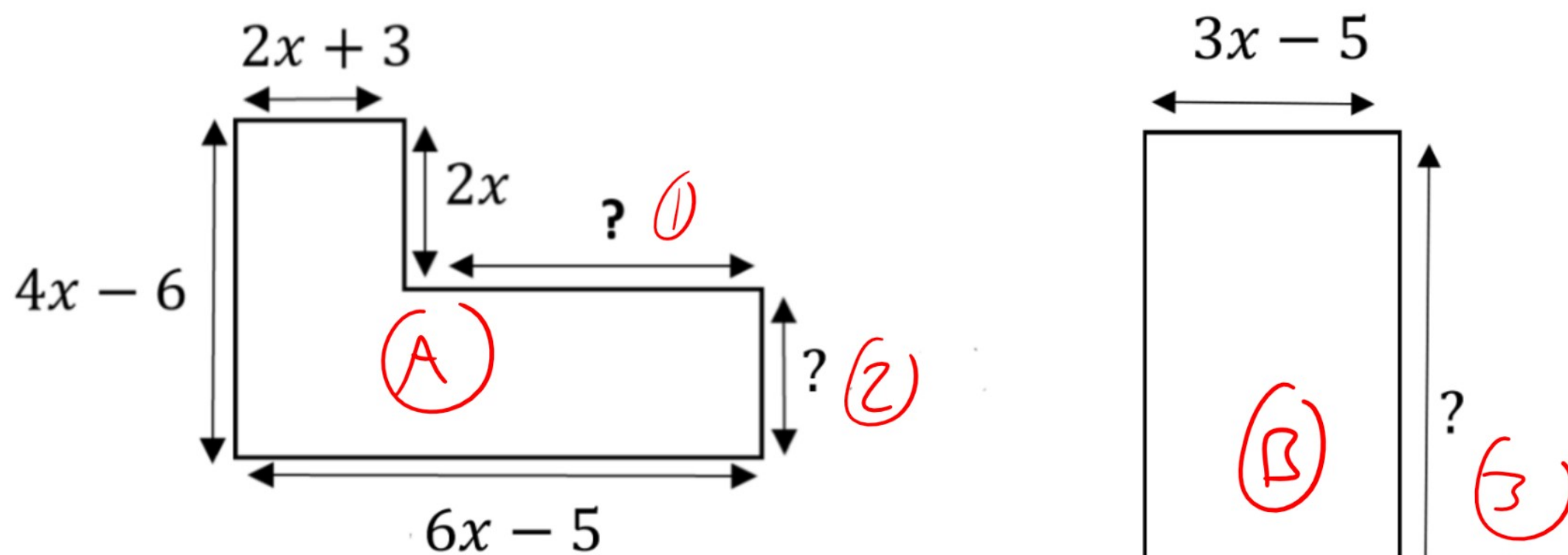


$$\begin{aligned} \text{perimeter} &= 2(3x + 7) + 2(4x) \\ &= 6x + 14 + 8x \\ &= 14x + 14 \end{aligned}$$

Answer: 14x + 14
(3 marks)



Q13. The perimeter of the two shapes below are equal. For each shape, find an expression for the missing sides in terms of x , simplifying your answers fully.



$$\textcircled{1} : 6x - 5 - (2x + 3) \\ = 4x - 8$$

$$\textcircled{2} : 4x - 6 - 2x \\ = 2x - 6$$

$$\Rightarrow \text{perimeter } \textcircled{A} \text{ is } 4x - 6 + 2x + 3 + 2x + 4x - 8 + 2x - 6 + 6x - 5 \\ = 20x - 22$$

$$\text{Perimeter } \textcircled{B} = 20x - 22 \text{ also.}$$

$$\Rightarrow \textcircled{3} : \frac{1}{2} [20x - 22 - 2(3x - 5)] \\ = \frac{1}{2} (20x - 22 - 6x + 10) \\ = \frac{1}{2} (14x - 12) \\ = \underline{7x - 6}$$

Answer: 7x - 6

(5 marks)

