Factorising by common factor: 10 practice questions

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Name: _____ Date: _____

Attempt all questions and show your working. Suggested time: 15 to 20 minutes.

Section A: Consolidating (Questions 1-4)

Question 1

Find the highest common factor (HCF) of each pair.

(a) 12 and 18

(b) 6x and 9x

(c) $4a^2b$ and $10ab^2$

Question 2

Factorise:

(a) $5x + 15$

(b) $7a - 14$

(c) $12y + 8$

Question 3

Factorise:

(a) $x^2 + 4x$

(b) $3m^2 - 6m$

Question 4

(a) Expand $4(2x - 3)$.

(b) Find the number that goes in the box: $6x + 18 = 6(x + \square)$

Section B: Standard (Questions 5-10)

Question 5

Factorise fully:

(a) $8x^2y + 12xy^2$

(b) $15a^3 - 10a^2$

(c) $18p^2q^3 - 27pq^2$

Question 6

Factorise by taking out a negative common factor.

(a) $-4x - 12$

(b) $-6a^2 + 9a$

Question 7

Factorise fully:

(a) $2x^3 + 6x^2 - 10x$

(b) $6a^2b - 9ab + 12ab^2$

Question 8

Fill in the boxes: $12x^3y - 20x^2y^2 = 4x^2y(\square - \square)$

Question 9

(a) Sam factorised $6x^2 + 9x$ as $3(2x^2 + 3x)$. Explain why Sam's answer is not fully factorised, and write the fully factorised form.

(b) Mia factorised $4a + 4$ as $4a$. Explain Mia's mistake and write the correct answer.

Question 10

Each expression has a common factor in brackets. Factorise:

(a) $x(y + 2) + 3(y + 2)$

(b) $a(b - 5) - 4(b - 5)$

(c) $2m(m + 1) + (m + 1)$

Factorising by common factor: answers

Question 1

Answer: (a) 6 (b) 3x (c) 2ab

Question 2

Answer: (a) 5(x + 3) (b) 7(a - 2) (c) 4(3y + 2)

Question 3

Answer: (a) x(x + 4) (b) 3m(m - 2)

Question 4

Answer: (a) 8x - 12 (b) 3

Question 5

Answer: (a) 4xy(2x + 3y) (b) $5a^2(3a - 2)$ (c) $9pq^2(2pq - 3)$

Question 6

Answer: (a) -4(x + 3) (b) -3a(2a - 3)

Question 7

Answer: (a) $2x(x^2 + 3x - 5)$ (b) 3ab(2a - 3 + 4b) (terms in the bracket may be in any order)

Question 8

Answer: 3x and 5y, so $4x^2y(3x - 5y)$

Question 9

Answer: (a) The bracket still has a common factor of x (Sam took out 3 but not the HCF 3x). Fully factorised: 3x(2x + 3). (b) The 4 is a common factor of both terms, so it leaves a and 1 in the bracket: 4(a + 1). (4a is not equal to 4a + 4.)

Question 10

Answer: (a) (y + 2)(x + 3) (b) (b - 5)(a - 4) (c) (m + 1)(2m + 1) (factors may be in either order)