

Boost Free Lessons - Year 9 Maths

Lesson 6: Simple Factorising

Name: _____ Grade: _____ Date: _____

Worked Example 1

Factorise $12x + 18$

1. Find the highest common factor of 12 and 18. It is 6.
2. Divide each term by 6: $12x \div 6 = 2x$, and $18 \div 6 = 3$.
3. Write the common factor outside and what is left inside the brackets.

$$= 6(2x + 3)$$

Worked Example 2

Factorise $15a^2b - 20ab^2$

1. Start with the numbers. The highest common factor of 15 and 20 is 5.
2. Now the letters. Both terms contain at least one a and one b, so ab is common. The full HCF is 5ab.
3. Divide each term by 5ab: $15a^2b \div 5ab = 3a$, and $20ab^2 \div 5ab = 4b$.
4. Check by expanding: $5ab(3a - 4b) = 15a^2b - 20ab^2$ (correct).

$$= 5ab(3a - 4b)$$

Remember: Take out the **highest** common factor of the numbers and the letters together. A whole bracket can be a common factor too. Always check by expanding.



Question 1: Factorise the following.

1. $4x + 8$

2. $6y - 9$

3. $10a + 15$

4. $12m - 18$

5. $x^2 + 7x$

6. $5k^2 - 10k$

7. $8p^2 + 12p$

8. $3t^2 - t$

9. $14w + 21$

10. $9c^2 + 6c$



Question 2: Factorise the following.

1. $6ab + 9a$

2. $8xy - 12y$

3. $10a^2b + 15ab$

4. $4m^2n - 6mn^2$

5. $12p^2q + 18pq^2$

6. $5x^2y - 10xy^2$

7. $7a^3 + 14a^2$

8. $9m^3 - 12m^2$



Question 3: Answer the following questions.

1. Factorise $2x + 4y + 6$.
2. A rectangle has area $8x^2 + 12x$ and width $4x$. Write an expression for its length.
3. Factorise $6a^2b - 9ab^2$, then check your answer by expanding.
4. Factorise $-6x - 12$.
5. Factorise $x(x + 2) + 3(x + 2)$ by taking out the common bracket.





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Answers: Simple Factorising**Question 1**

1. $4(x + 2)$
2. $3(2y - 3)$
3. $5(2a + 3)$
4. $6(2m - 3)$
5. $x(x + 7)$
6. $5k(k - 2)$
7. $4p(2p + 3)$
8. $t(3t - 1)$
9. $7(2w + 3)$
10. $3c(3c + 2)$

Question 2

1. $3a(2b + 3)$
2. $4y(2x - 3)$
3. $5ab(2a + 3)$
4. $2mn(2m - 3n)$
5. $6pq(2p + 3q)$
6. $5xy(x - 2y)$
7. $7a^2(a + 2)$
8. $3m^2(3m - 4)$

Question 3

1. $2(x + 2y + 3)$
2. $2x + 3$
3. $3ab(2a - 3b)$, and expanding gives $6a^2b - 9ab^2$ (correct)
4. $-6(x + 2)$
5. $(x + 2)(x + 3)$

