

Boost Free Lessons - Year 8 Maths

Lesson 7: Factorising Expressions

Name: _____ Grade: _____ Date: _____

Worked Example 1

Factorise $6x + 15$

1. Find the highest common factor of the numbers 6 and 15. It is 3.
2. Divide each term by 3: $6x \div 3 = 2x$, and $15 \div 3 = 5$.
3. Write the common factor outside the brackets and what is left inside.

$$= 3(2x + 5)$$

Worked Example 2

Factorise $8a^2 - 12a$

1. Start with the numbers. The highest common factor of 8 and 12 is 4.
2. Now look at the letters. Both terms contain a, so a is common too. The full HCF is $4a$.
3. Divide each term by $4a$: $8a^2 \div 4a = 2a$, and $12a \div 4a = 3$.
4. Check by expanding: $4a(2a - 3) = 8a^2 - 12a$ (correct).

$$= 4a(2a - 3)$$

Remember: Factorising is the opposite of expanding. Always take out the **highest** common factor, including any letters, and check your answer by expanding it back.



Question 1: Factorise the following.

1. $2x + 6$

2. $5y - 15$

3. $3a + 12$

4. $4m + 10$

5. $7k - 21$

6. $6p + 9$

7. $8t - 12$

8. $10w + 25$

9. $9c - 6$

10. $14n + 21$



Question 2: Factorise the following.

1. $x^2 + 5x$

2. $3a^2 - a$

3. $6m^2 + 9m$

4. $4y^2 - 8y$

5. $10k^2 + 15k$

6. $2p^2 + 6p$

7. $12t^2 - 18t$

8. $5ab + 10a$



Question 3: Answer the following questions.

1. Factorise $4x + 4y$.
2. Factorise $3m + 6n - 9$.
3. A rectangle has area $6x + 18$ and a width of 6. Write an expression for its length.
4. Factorise $7a^2 + 7a$, then check your answer by expanding it.
5. Factorise $-5x - 20$.





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Answers: Factorising Expressions**Question 1**

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

Question 2

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

Question 3

1. $4(x + y)$
2. $3(m + 2n - 3)$
3. $x + 3$
4. $7a(a + 1)$, and expanding gives $7a^2 + 7a$ (correct)
5. $-5(x + 4)$

