

Monday, 15 March 2021



Simplifying Expressions

Learning Objective:

Be able to simplify expressions by multiplying and dividing

Starter activity-Harder Simplification.



(remember, a , a^2 and a^3 are completely different terms)

$$1) 4a - 5a^2 + 2a + 3a^2 = \underline{6a - 2a^2}$$

$$2) 5h^2 + 2h^3 - 10h^2 - 3h^3 = \underline{-5h^2 - h^3}$$

$$3) 3x^2 - 4x - 5x^2 + x = \underline{-3x - 2x^2}$$

$$4) -4t^2 + 7t - 10t^2 + 5t^3 = \underline{7t - 14t^2 + 5t^3}$$

$$5) r^2 + 2r - 7r^2 - 7r^2 - 2r = \underline{-13r^2}$$



Multiplying Terms Together

When two terms in algebra are being multiplied together, they are simply written next to each other.

e.g. $3a$ means $3 \times a$
and efg means $e \times f \times g$

Multiplying Terms Together



Simplify:

$$2a \times 4b = \underline{8ab}$$

$$10c \times 2de = \underline{20cde}$$

$$3w \times 4y \times 5z = \underline{60wyz}$$



Questions – simple multiplication

- 1) $7ab \times 8pq$ **56abpq**
- 2) $3f \times 2h \times 5a$ **30afh**
- 3) $3abc \times 4def$ **12abcdef**
- 4) $5g \times 25$ **125g**
- 5) $5mn \times 2pq \times 4$ **40mnpq**
- 6) $5f \times g \times h \times 2j$ **10fghj**
- 7) $3w \times 4d \times 2h \times yz$ **24dhwyz**
- 8) $7pqr \times 4abc \times 2h$ **56abchpqr**

Multiplying terms

Example
Simplify

$$3 \times a \times 2 \times b = 6ab$$

Example
Simplify

$$4 \times f \times 4 \times y = 16fy$$

Example
Simplify

$$7y \times 2x = 14yx$$

Questions

1. Simplify $5 \times a \times 4 \times b = 20ab$

2. Simplify $3 \times m \times 7 \times n = 21mn$

3. Simplify $9 \times c \times 3 \times d = 27cd$

4. Simplify $5p \times 4e = 20pe$

5. Simplify $8t \times 2h = 16th$

6. Simplify $6r \times 5t = 30rt$

7. Simplify $9h \times 6g = 54hg$

8. Simplify $9k \times 4j = 36kj$

9. Simplify $8y \times 8x = 64yx$





Questions – reverse multiplication

- 1) $7ab \times \underline{10c} = 70abc$
- 2) $3f \times \underline{4g} \times 5h = 60fgh$
- 3) $3abc \times \underline{d} = 3abcd$
- 4) $5g \times \underline{4} = 20g$
- 5) $5mn \times \underline{p} \times 4 = 20mnp$
- 6) $5f \times \underline{4h} \times 2g = 40fgh$
- 7) $3w \times \underline{4} \times 2v \times yz = 24vwyz$
- 8) $4bc \times \underline{10e} \times 2ad = 80abcde$

Dividing Algebraic Terms



Simplify:

$$8a \div 4 = \underline{2a}$$

$$10ab \div 2a = \underline{5b}$$

$$\frac{20pq}{pq} = \underline{20}$$

Powers



Aims:

To remember how to work out the HCF & LCM from any given pair of numbers

To be able to understand how indices (powers) work in algebra

To be able to manipulate the powers in an expression in order to simplify it

Powers Rules

$$a \times a = a^2$$

$$a \times a \times a \times a = a^4$$

But, what is $a^2 \times a^4$?

It's $(a \times a) \times (a \times a \times a \times a) =$

What did you do with the powers? a^6

You added them!

Rule 1:

When you **multiply** powers of the same letter or number you **add** the indices...



Indices Questions



$$a^3 \times a^6 \times a^2 = \underline{a^{11}}$$

$$c^3 \times c^5 \times c = \underline{c^9}$$

$$2y^2 \times 4y^5 = \underline{8y^7}$$

$$3m^3 \times 4m^5 = \underline{12m^8}$$

Harder Indices Questions



Q1. $2a^3b^6 \times a^6b^2 =$ **$2a^9b^8$**

Q2. $3c^5d^4 \times 5c^2d^4 =$ **$15c^7d^8$**

Q3. $2ab^4 \times 4a^2b^3 =$ **$8a^3b^7$**

Q4. $3mnp^3 \times 4mn^2p^5 =$ **$12m^2n^3p^8$**