

# Notice Anything?



What is the Greatest Common Factor

$$\begin{array}{l} 44 = 2 \times 2 \times 11 \\ 132 = 2 \times 2 \times 3 \times 11 \end{array}$$

$$\text{GCF} = 2 \cdot 2 \cdot 11$$

$$\boxed{\text{GCF} = 44}$$

What is the Greatest Common Factor

$$856x^2y^3 \quad \text{AND} \quad 1200x^4y^2$$

$$856x^2y^3 = 2 \cdot 2 \cdot 2 \cdot 107 \cdot \underline{x} \cdot \underline{x} \cdot \underline{y} \cdot \underline{y} \cdot y$$

$$1200x^4y^2 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 5 \cdot 5 \cdot \underline{x} \cdot \underline{x} \cdot x \cdot x \cdot \underline{y} \cdot \underline{y}$$

$$\text{GCF} = 2 \cdot 2 \cdot 2 \cdot x \cdot x \cdot y \cdot y$$

$$\boxed{\text{GCF} = 8x^2y^2}$$

How many terms are there? 3

Is there anything common to all of them? x

$$\underline{3x} + \underline{10xy} - \underline{7xyz}$$

Divide all terms by the GCF

$$x(3 + 10y - 7yz)$$

Greatest Common

Factor

other factor

$$\frac{3x}{x} = 3x^0 = \underline{3}$$

$$\frac{10xy}{x} = 10x^0y = \underline{10y}$$

$$\frac{-7xyz}{x} = -7x^0yz = \underline{-7yz}$$

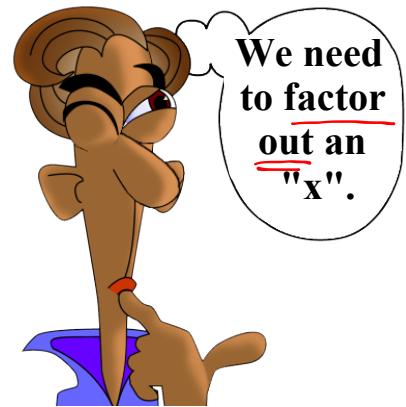
Remember

$$3x + 10xy - 7xyz$$

$$\begin{array}{l} 3x \rightarrow 3 \cdot x \\ 10xy \rightarrow 2 \cdot 5 \cdot x \cdot y \\ 7xyz \rightarrow 7 \cdot x \cdot y \cdot z \end{array}$$

$$3x + 10xy - 7xyz$$

$$x(3 + 10y - 7yz)$$



Divide all terms  
by "x"  
GCF

What do you notice?

$$x^6 + x^5$$

$$x^5(x+1)$$

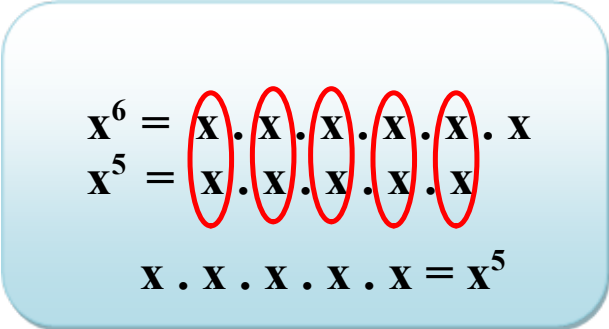
Take out the smallest power (lowest exponent)

$$\text{GCF} = x^5$$

$$\frac{x^6}{x^5} = x^{6-5} = \underline{x^1}$$

$$\frac{x^5}{x^5} = x^{5-5} = x^0 = \underline{1}$$

$$x^6 + x^5$$



$x^6 = x \cdot x \cdot x \cdot x \cdot x \cdot x$   
 $x^5 = x \cdot x \cdot x \cdot x \cdot x$   
 $x \cdot x \cdot x \cdot x \cdot x = x^5$

**Take out the greatest common factor, which will be the smallest of the like powers!!**

$$14xy + 28xyz$$

$$\begin{aligned}
 14 &= 2 \cdot 7 \cdot x \cdot y \\
 28 &= 2 \cdot 2 \cdot 7 \cdot x \cdot y \cdot z \\
 \underline{2} \cdot \underline{7} \cdot \underline{x} \cdot \underline{y} &= 14xy \quad \text{GCF}
 \end{aligned}$$

$$14xy(1 + 2z)$$

$$\frac{14xy}{14xy} = \underline{1}$$

$$\frac{28xyz}{14xy} = \underline{2z}$$



$$1. \quad a^5 c^6 z^{11} + a^9 c^{10} z^{13}$$

$$a^5 c^6 z^{11} (1 + a^4 c^4 z^2)$$

$$\frac{a^5 c^6 z^{11}}{a^5 c^6 z^{11}} = \underline{1}$$

$$\frac{a^9 c^{10} z^{13}}{a^5 c^6 z^{11}} = \underline{a^4 c^4 z^2}$$

$$2. \quad 25x^7 - 15x^5$$

$$5x^5 (5x^2 - 3)$$

$$\frac{25x^7}{5x^5} = \underline{5x^2}$$

$$\frac{-15x^5}{5x^5} = -3x^0 = \underline{-3}$$

$$3. \quad \underline{12x^7y^8} - \underline{24x^9y^4}$$

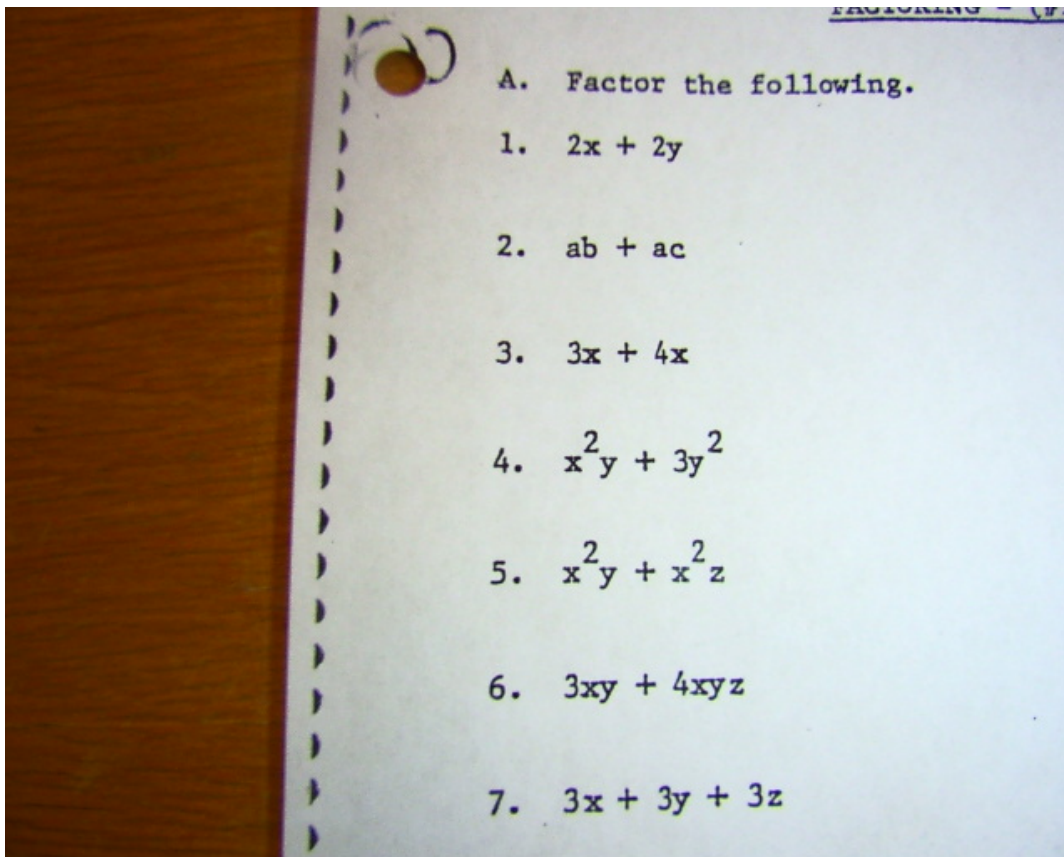
$$\underline{12x^7y^4} (y^4 - 2x^2)$$

$$4. \quad \underline{13x^2y^5w^3} - \underline{39x^5y^2w} + \underline{26x^3y}$$

$$\underline{13x^2y} (y^4w^3 - 3x^3yw + 2x)$$

$$5. \quad \underline{91x} - \underline{7y}$$
$$\underline{7}(13x - y)$$

$$6. \quad \underline{2x^5y^3} - \underline{8x^2y^2} + \underline{10y}$$
$$\underline{2y}(x^5y^2 - 4x^2y + 5)$$



8.  $15y^2 + 20a + 30b$

9.  $4x + 6a$

10.  $10y - 5$

11.  $15ax - 3a$

12.  $a^3x^2 - a^2x^2 - qx$

13.  $14y^4 - 35y^3 - 42y^2$

14.  $12y^4 + 18y^6$

15.  $-6x^8 + 9$

12.  $a^3x^2 - a^2x^2 - qx$

13.  $14y^4 - 35y^3 - 42y^2$

14.  $12y^4 + 18y^6$

15.  $-6x^8 + 9$

16.  $2ax - 2bx - 2cx$

17.  $-9x^3 + 33x^2 - 6x + 12$

18.  $-100x^4 - 1000x^3 - 10\,000x$

19.  $2x^3 - 10x^2 + 12x$

20.  $4y^3 + 8y^2 - 4y$

21.  $8x^2 - 24x + 96$

22.  $-63y^5 + 15y^3 - 27y^2 + 45y$

23.  $-10ey^5 - 30e^2y^2 + 45ey - 15e$

24.  $36a^7x^4 - 42a^9x^2$

25.  $4y^3 - 2ay^2$

26.  $-3y^4 - 6y^3 + 21y^2$

27.  $4x^2 - 2x + 12$

28.  $3x^3 - 9x^2 + 6x$

29.  $30y^4 - 18y^3 - 6y^2$

30.  $7x - 28$

31.  $42a^2b^2 + 7ab + 6b$

32.  $3x^2 + 12x + 9$

33.  $100 - 1000x$



29.  $30y^4 - 18y^3 - 6y^2$

30.  $7x - 28$

31.  $42a^2b^2 + 7ab + 6b$

32.  $3x^2 + 12x + 9$

33.  $100 - 1000x$

34.  $44a - 33b + 22c$

35.  $4ab^2 - ab^2c$