

BE-Alg. 2 TUESDAY 10-12-10

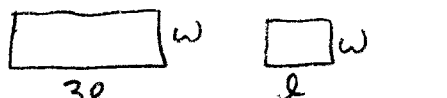
① $-4x^3y^{-2}(5x^5 + 3xy - 2x^{-1}y^2)$

②
$$\frac{5x^2y - 15xy^3 + 10x^3y^4}{5xy}$$

③ $(6x-1)(6x+1)$

ACT ④ The length of a rectangle is 3 times the length of a smaller rectangle. The 2 rectangles have the same width. The area of the smaller rectangle is A square units. The area of the larger rectangle is kA square units. What is the value of k?

Ans

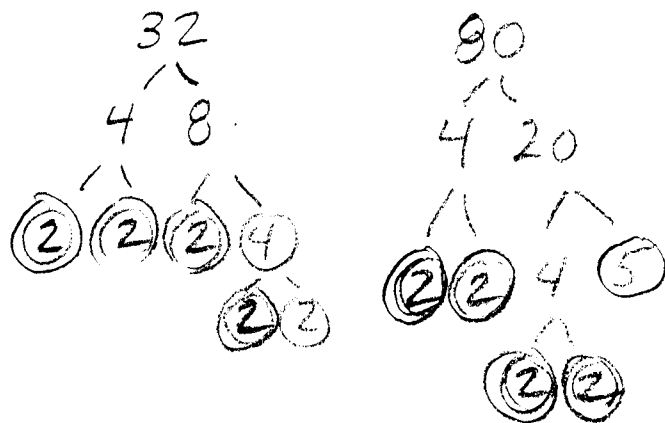

 $3lw = kA$ $(lw) = A$
 $3A = kA \therefore \boxed{k=3}$

GCF Greatest Common Factor

⊗ 12, 18 GCF = 6

⊗ 25, 35 GCF = 5

⊗ 32, 80 GCF = ?



Multiply the common prime factors
 $2 \cdot 2 \cdot 2 \cdot 2 = \boxed{16} = \text{GCF}$

⊗ x^2, x^5 GCF = ?

xx , $xxxxx$

GCF = x^2

Factoring a polynomial by "undoing" the distributive property.

⊗ $32x^2 + 80x^5$

$\boxed{\frac{?}{\text{GCF}}} (\quad + \quad) \Rightarrow \boxed{16x^2(2 + 5x^3)}$

DOES IT WORK?

CH. 5-4 FACTORING POLYNOMIALS

ⓔx Factor $8x^3 + 12x^{10}$

$$4x^3(? + ?) \Rightarrow 4x^3(2 + 3x^7)$$

ⓔx Factor $15x^3 + 5x^2 + 10x$

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

DID you check it?

EX 1
pg 239 Factor $6x^2y^2 - 2xy^2 + 6x^3y$

$$2xy(3xy - y + 3x^2)$$

💡 Get in the habit of Always checking a polynomial to see if it has a GCF - if so, "pull" it out. It will often either be the key to solving a problem or a way to make solving it easier. **THINK GCF!!**

Any ideas on a GCF for this 4-term polynomial?

$$x^3 - 4x^2 + 3x - 12$$

A useful technique for ≥ 4 -term polynomials is to use FBG

factoring by grouping

It won't always work, sometimes if it doesn't work you can get it to work by rearranging terms. Here is an FBG example:

$$x^3 - 4x^2 + 3x - 12$$

$$\Rightarrow (x^3 - 4x^2) + (3x - 12)$$

$$x^2(x - 4) + 3(x - 4)$$

$$\underbrace{\hspace{1.5cm}}_{\text{GCF}} \underbrace{\hspace{1.5cm}}_{\text{GCF}} \rightarrow \underline{\hspace{1cm}} \text{?} (x^2 + 3)$$

$$\begin{array}{l} x^2 \underline{a} + 3 \underline{a} \\ \swarrow \quad \searrow \\ \text{?} \text{?} (\quad + \quad) \\ \text{GCF} \\ a(x^2 + 3) \end{array}$$

$$\boxed{(x - 4)(x^2 + 3)}$$

Check: $x^3 + 3x - 4x^2 - 12$
(FOIL) ✓ ✓ ✓ ✓

TIP: if FBG works, it works for 2 of the 3 ways you can arrange the terms, so if you try it twice and it doesn't work, don't bother trying it the 3rd way.

Lets see if Rearranging works:

$$x^3 - 4x^2 + 3x - 12 \quad \text{original}$$

$$(x^3 + 3x) \{-4x^2 - 12\} \quad \text{NOT } -(4x^2 - 12)$$



WATCH OUT IF THIS 3rd term is negative, change
 $-4x^2$ to $+(-4x^2)$

PUT PARENTHESIS here

$$(x^3 + 3x) + (-4x^2 - 12)$$

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

💡 FACTOR -4 to change $-x^2 - 3$
to $x^2 + 3$

$$\boxed{(x^2 + 3)(x - 4)} \quad \text{STILL WORKED!}$$

PRIME A POLYNOMIAL WITH NO FACTORS
 POLYNOMIAL (OTHER THAN itself AND ONE)

• Homework Pg 242 #4, 5, 6, 15-20.

GCF
 ↓
 24 teams = FBG