Factor the GCF from each expression

1. $15x^4 + 3x^5$

2. $16x^2 + 24$

a.

b.

3. $18x^4 y^7 + 36x^3 y^6 - 42x^5 y^5$

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

c.

d.

Not all may be possible.

1. Find two numbers that sum to **8** and have a product of **12** _____

2. Find two numbers that sum to **5** and have a product of **6** _____

3. Find two numbers that sum to **5** and have a product of **-14** _____

4. Find two numbers that sum to **-6** and have a product of **12** _____

5. Find two numbers that sum to **16** and have a product of **15** _____

6. Find two numbers that sum to **-4** and have a product of **-21** _____

7. Find two numbers that sum to **1** and have a product of **-56** _____

8. Find two numbers that sum to **-14** and have a product of **40** _____

9. Find two numbers that sum to **0** and have a product of **-25** _____

10. Find two numbers that sum to **8** and have a product of **16** _____

11. **Multiply the following:**

a. $(x+6)(x+3)$

b. $(x+7)(x-2)$

$x^2 +$ _____ $x +$ _____

$x^2 +$ _____ $x +$ _____

Notice: What is the sum of the constants in each binomial above?

Notice: What is the product of the constants in each binomial above?

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12. FACTOR the following (not all may be factored):

a. $x^2 + 9x + 18$

b. $x^2 + 6x - 40$

c. $x^2 + 5x - 14$

d. $a^2 - 7a + 6$

d. $m^2 + 8m + 16$

e. $g^2 - 11g + 24$

f. $x^2 + 5x - 6$

g. $x^2 + 5x + 6$

h. $m^2 - 7m - 60$

i. $2g^2 - 14g + 24$

j. $3x^3 - 24x^2 - 60x$

k. $5x^4 - 5x^3 - 30x^2$

13. Special Forms

Name	Formula	Example
Difference of two squares	$A^2 - B^2 = (A+B)(A-B)$	$64x^2 - 9 = (8x)^2 - 3^2 = (8x+3)(8x-3)$
Perfect square trinomials	$A^2 + 2AB + B^2 = (A+B)^2$ $A^2 - 2AB + B^2 = (A-B)^2$	$x^2 - 14x + 49 = x^2 - 2(x \cdot 7) + 7^2 = (x-7)^2$

a. $x^2 - 36$

b. $m^2 + 9$
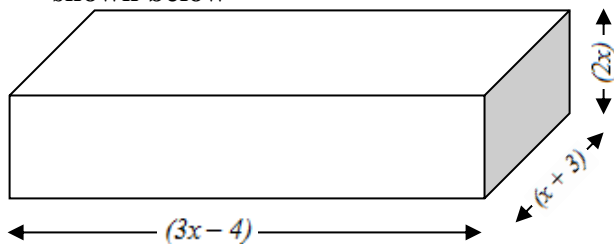
c. $m^4 - 81$

d. $4b^2 - 400$

e. $4x^2 + 12x + 9$

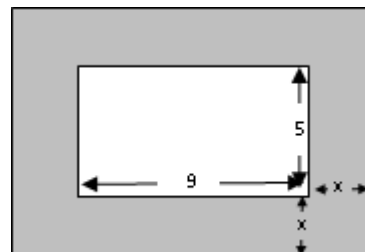f. $64a^2 - 48a + 9$

g. $\quad 121a^8 - 64b^4$

h. $18m^5 + 48m^3 + 32m$

i. $36x^4 - 60x^2 y^3 + 25y^6$

14. Find the volume of the rectangular prism shown below

$(2x)$

$(x + 3)$

$(3x - 4)$

15. Describe the area of the shaded region as a polynomial

5

9

x

x

15. Multiply the following:

a. $(3x-2)(2x+1)$

b. $(4x+3)(x-3)$

16. FACTOR the following:

a. $6x^2 - 1x - 2$

b. $4x^2 - 9x - 9$

c. $2x^2 + 7x - 15$

d. $3a^2 - 10a + 8$

e. $5g^2 - 14g + 8$

f. $6m^2 + 10m - 24$

g. $6b^3 - 28b^2 + 30b$

h. $5m^2 + 11m - 12$