

**Factor the GCF from each expression**

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

a.

2.  $16x^2 + 24$

b.

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

c.

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

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

$x^2 + \underline{\hspace{2cm}} x + \underline{\hspace{2cm}}$

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Notice: What is the sum 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 | $A^2 + 2AB + B^2 = (A+B)^2$<br>$A^2 - 2AB + B^2 = (A-B)^2$ | $x^2 - 14x + 49 = x^2 - 2(x \cdot 7) + 7^2 = (x-7)^2$ |

a.  $x^2 - 36$

b.  $m^2 + 9$

c.  $m^4 - 81$

d.  $4b^2 - 400$

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

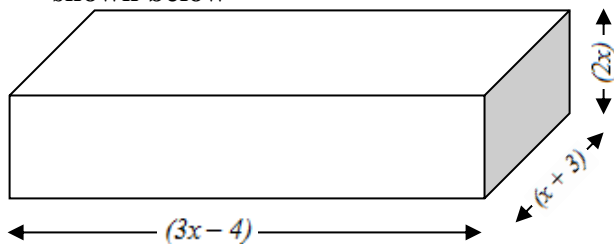
f.  $64a^2 - 48a + 9$

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

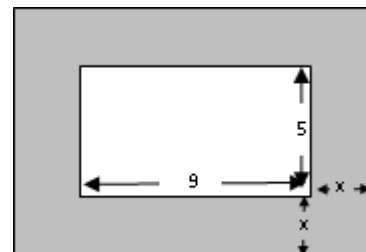
h.  $18m^5 + 48m^3 + 32m$

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

14. Find the volume of the rectangular prism shown below



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



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