

**PART I GET STARTED****Today's Mathematics**

We will use the GCF and the Distributive Property to factor expressions.

**Essential Question**

How can we reverse distribution to write a product?

**DO NOW**

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1. Find the GCF of 12 and 18.

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

3. Simplify  $4x + 2x + 8$ .

**SEE IT**

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There are 12 red counters and 18 blue counters. Make the greatest possible number of identical groups. How many of each color go in one group?

**QUICK WRITE — 2 MINUTES**

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How does finding the GCF help us reverse the Distributive Property?

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**PART II INVESTIGATE****BUILD AND COMPARE**

Find the GCF of the coefficients. Divide each term by it, then write the expression as a product.

| Expression | GCF | Factored expression |
|------------|-----|---------------------|
| $12 + 18$  |     |                     |
| $12x + 18$ |     |                     |
| $8y + 12$  |     |                     |
| $15n - 10$ |     |                     |

1. Expand your factored expression for  $12x + 18$  to check it.

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2. Both  $2(6x + 9)$  and  $6(2x + 3)$  equal  $12x + 18$ . Which uses the GCF? Explain.

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3. Can  $7x + 10$  be factored using a whole-number common factor greater than 1? Explain.

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**PART III MAKE SENSE AND PRACTICE****WHAT WE CAN CONCLUDE**

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To factor using the GCF, write each term as the GCF times its remaining factor. Then reverse distribution. Keep the plus or minus sign inside the parentheses. Expand to check.

**WORKED MODEL**

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$$18x - 12 = 6(3x) - 6(2) = 6(3x - 2). \text{ Check: } 6(3x - 2) = 18x - 12.$$

**MUST DO**

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1. Factor  $10 + 15$  using the GCF.
  
  
  
  
  
  
  
  
  
  
2. Factor  $14x + 21$ .
  
  
  
  
  
  
  
  
  
  
3. Factor  $20y - 12$ .
  
  
  
  
  
  
  
  
  
  
4. Factor  $9a + 36$ .
  
  
  
  
  
  
  
  
  
  
5. A rectangle is 6 cm tall and has area  $(18x + 24) \text{ cm}^2$ . Find its width.

**READY FOR MORE**

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Find two different factored forms of  $24x + 16$ . Identify the one that uses the GCF.

## PART IV PUZZLE PRACTICE

### Homework — Crack the code

Factor using the GCF. Match to the letter bank. Record the letters in problem order.

| No. | Problem    | Work and result |
|-----|------------|-----------------|
| 1   | $6x + 9$   |                 |
| 2   | $8x + 12$  |                 |
| 3   | $10x - 15$ |                 |
| 4   | $12x + 18$ |                 |
| 5   | $14x + 21$ |                 |
| 6   | $16x - 24$ |                 |
| 7   | $18x + 27$ |                 |
| 8   | $20x + 30$ |                 |

### LETTER BANK

| Letter | Expression  | Letter | Expression   |
|--------|-------------|--------|--------------|
| F      | $3(2x + 3)$ | A      | $4(2x + 3)$  |
| C      | $5(2x - 3)$ | T      | $6(2x + 3)$  |
| O      | $7(2x + 3)$ | R      | $8(2x - 3)$  |
| I      | $9(2x + 3)$ | T      | $10(2x + 3)$ |

### DECODE

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|   |   |   |   |   |   |   |   |