# Whole Numbers and Decimals

### Lesson 11 Factoring Sums

Standards 6.NS.B.4c

Learning target I can factor a sum using the greatest common factor.

Materials Place-value chart, graph paper for long division, pencils.

### Lesson Flow 50 Minutes

0–5 Activate prior knowledge. Read the learning target. Ask students what they already know about factoring sums. Use a quick model or estimate to make their starting ideas visible.

5–17 Teach and model. Find the GCF of the two addends. Divide each addend by that factor and place the quotients inside parentheses. The inside numbers should share no common factor greater than 1. Work through the two examples on the attached instruction page. Have students name the first step before showing it.

17–22 Guided practice. Revisit worked Example 2 with its solution covered. Students propose the next step and explain why it is valid; uncover and compare with the worked solution.

22–45 Independent classwork. Assign the attached 10 questions in order. Check items 1–3 for entry-level understanding, 4–6 for connected procedures, 7–8 for representation and explanation, and 9–10 for application or justification. Ask students to use the instruction-page notes area or extra grids for longer work.

45–50 Check understanding. Use classwork question 10 as an exit discussion: Factor 70 + 100 using its GCF. Make the inside numbers relatively prime. Compare the result with the answer key and ask a student to defend the method.

### Support and Extension

Support Model item 1 together with the listed tools, then have students attempt item 2 independently. Watch decimal place alignment, quotient zero digits, and the difference between GCF and LCM.

Extension Ask students to solve a final item another way, draw a second representation, or create a related problem with a checked answer.

Next step Record which students can explain the target independently. Begin the next teaching session with a brief correction for any recurring error.

Name _____ Date _____

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### Learn and Discuss

Find the GCF of the two addends. Divide each addend by that factor and place the quotients inside parentheses. The inside numbers should share no common factor greater than 1.

Example 1 Factor 10 + 15 using its GCF. Make the inside numbers relatively prime.
Solution 5(2 + 3). GCF = 5; 10 = 5 × 2 and 15 = 5 × 3.
Example 2 Factor 18 + 30 using its GCF. Make the inside numbers relatively prime.
Solution 6(3 + 5). GCF = 6; 18 = 6 × 3 and 30 = 6 × 5.

### Classwork Show Your Work

Complete the 10 problems on the following page. Refer to the examples, draw models, and check your results.

**My Notes or Second Method**

# Lesson 11 Factoring Sums

Name _____ Show calculations, models, and units.

1. Factor 6 + 9 using its GCF. Make the inside numbers relatively prime.

2. Factor 8 + 12 using its GCF. Make the inside numbers relatively prime.

3. Factor 10 + 15 using its GCF. Make the inside numbers relatively prime.

4. Factor 18 + 30 using its GCF. Make the inside numbers relatively prime.

5. Factor 45 + 60 using its GCF. Make the inside numbers relatively prime.

6. Factor 12 + 18 using its GCF. Make the inside numbers relatively prime.

7. Factor 48 + 72 using its GCF. Make the inside numbers relatively prime.

8. Factor 24 + 36 using its GCF. Make the inside numbers relatively prime.

9. Factor 60 + 84 using its GCF. Make the inside numbers relatively prime.

10. Factor 70 + 100 using its GCF. Make the inside numbers relatively prime.

# Factoring Sums

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1. 3(2 + 3)
Reasoning GCF = 3; 6 = 3 × 2 and 9 = 3 × 3.

2. 4(2 + 3)
Reasoning GCF = 4; 8 = 4 × 2 and 12 = 4 × 3.

3. 5(2 + 3)
Reasoning GCF = 5; 10 = 5 × 2 and 15 = 5 × 3.

4. 6(3 + 5)
Reasoning GCF = 6; 18 = 6 × 3 and 30 = 6 × 5.

5. 15(3 + 4)
Reasoning GCF = 15; 45 = 15 × 3 and 60 = 15 × 4.

6. 6(2 + 3)
Reasoning GCF = 6; 12 = 6 × 2 and 18 = 6 × 3.

7. 24(2 + 3)
Reasoning GCF = 24; 48 = 24 × 2 and 72 = 24 × 3.

8. 12(2 + 3)
Reasoning GCF = 12; 24 = 12 × 2 and 36 = 12 × 3.

9. 12(5 + 7)
Reasoning GCF = 12; 60 = 12 × 5 and 84 = 12 × 7.

10. 10(7 + 10)
Reasoning GCF = 10; 70 = 10 × 7 and 100 = 10 × 10.