

The “Develop Your Skill” exercises relate to the new material that has just been explained and illustrated in the lesson.

EXERCISE 2.5

DEVELOP YOUR SKILL

Do not compute, but write equivalent expressions without parentheses. Do not change the first term. When possible, give a second alternate form.

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|-------------------|--------------------|
| 1. $20 - (7 + 3)$ | 2. $10 + (7 + 8)$ |
| 3. $5 + (10 - 7)$ | 4. $13 + (10 - 4)$ |
| 5. $5 + (9 + 3)$ | 6. $14 - (10 - 7)$ |
| 7. $5 - (10 - 8)$ | 8. $7 + (20 - 10)$ |

The exercises are divided into two parts.

Write an equivalent expression without parentheses. Do not change the first term. Assume all differences are defined. When possible, give a second alternate form.

- | | |
|--------------------|--------------------|
| 9. $34 - (a + b)$ | 10. $26 + (x - n)$ |
| 11. $13 + (r + t)$ | 12. $44 - (y - m)$ |

MAINTAIN YOUR SKILL

Use the definition of subtraction to change each subtraction equation to the corresponding addition equation, and each addition equation to the corresponding subtraction equation. [1.3]

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|--------------------|--------------------|
| 13. $23 + 17 = 40$ | 14. $54 - 28 = 26$ |
| 15. $87 - x = 15$ | 16. $y + 55 = 91$ |

The “Maintain Your Skill” exercises are review problems. They reinforce key skills and prepare for upcoming lessons.

Solve each equation by using an invariant principle. [1.6]

17. What is x , if $8419 + 6523 = 8119 + x$?
18. What is x , if $8419 - 6523 = 8119 - x$?

All of the review problems are labeled with the number of the lesson where the problem is explained.

Construct a vector model for the composition of the operators. [2.3]

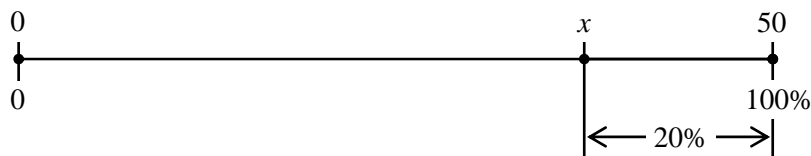
- | | |
|---------------|---------------|
| 19. $+ 7 - 3$ | 20. $+ 2 - 8$ |
| 21. $- 5 + 3$ | 22. $- 2 - 5$ |

The answers to all the odd-numbered exercises are in the back of the book.

Compute the basic form for each composite operator. [2.3]

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|----------------------|--------------------|--------------------|
| 23. $+ 10 - 16$ | 24. $- 15 + 3$ | 25. $- 18 - 15$ |
| 26. $+ 10 - (8 - 3)$ | 27. $+ 10 - 8 - 3$ | 28. $+ 10 - 8 + 3$ |
| 29. $+ 10 + 8 - 3$ | | |

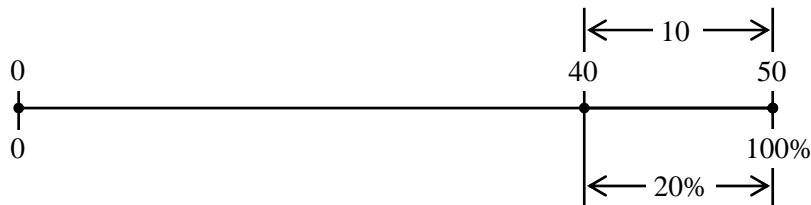
In Example 1, if the smaller amount of 40 is not known, then the question would be “What is 20% less than 50?” The model for this question looks like this, where x represents the unknown quantity:



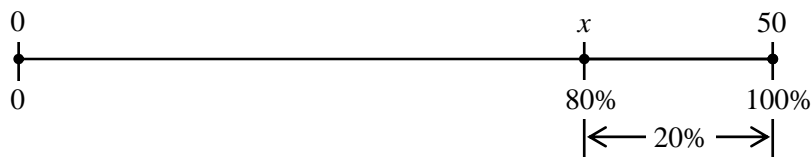
We have a choice of two methods of solving for x . We can find the amount of the decrease (like we did in the last lesson) and subtract this from 50:

$$(0.20)(50) = 10 \quad \text{20\% is written as a decimal.}$$

$$50 - 10 = 40 \quad \text{Subtract the decrease from 50.}$$



Alternatively, we can find the percent that corresponds to x . Since x is 20% less than 100%, x must correspond to 80%. This gives the following model:



The model shows that x is 80% of 50. Now we can set up a percent equation and solve for x :

$$x = (0.80)(50)$$

$$x = 40$$

Or, we can set up a proportion as in Lesson 8.2, and solve for x :

$$\frac{x}{0.8} = \frac{50}{1} \quad \text{and} \quad x = 40.$$

Having lots of diagrams helps students who are visual learners.

Side Notes remind students of important concepts.

Remember:
Change percents into decimals when writing an equation or computing.