

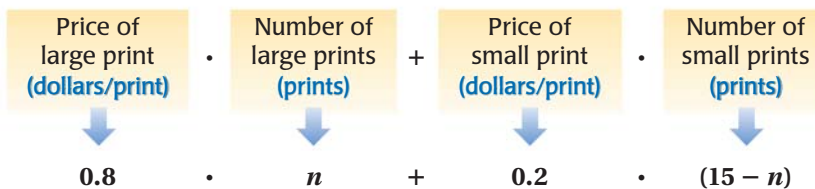
EXAMPLE 5 Simplify a mathematical model



DIGITAL PHOTO PRINTING You send 15 digital images to a printing service that charges \$.80 per print in large format and \$.20 per print in small format. Write and simplify an expression that represents the total cost if n of the 15 prints are in large format. Then find the total cost if 5 of the 15 prints are in large format.

Solution

Write a verbal model. Then write an algebraic expression.



An expression for the total cost is $0.8n + 0.2(15 - n)$.

$$\begin{aligned}
 0.8n + 0.2(15 - n) &= 0.8n + 3 - 0.2n && \text{Distributive property} \\
 &= (0.8n - 0.2n) + 3 && \text{Group like terms.} \\
 &= 0.6n + 3 && \text{Combine like terms.}
 \end{aligned}$$

▶ When $n = 5$, the total cost is $0.6(5) + 3 = 3 + 3 = \$6$.

INTERPRET EXPRESSIONS

The total number of prints is 15, so if n are in large format, then $15 - n$ are in small format.

GUIDED PRACTICE for Example 5

15. **WHAT IF?** In Example 5, write and simplify an expression for the total cost if the price of a large print is \$.75 and the price of a small print is \$.25.

1.2 EXERCISES

HOMEWORK KEY

- = **WORKED-OUT SOLUTIONS**
on p. WS1 for Exs. 21, 29, and 59
- ✚ = **TAKS PRACTICE AND REASONING**
Exs. 24, 33, 51, 59, 64, and 65
- ◆ = **MULTIPLE REPRESENTATIONS**
Ex. 61

SKILL PRACTICE

1. **VOCABULARY** Copy 12^7 and label the base and the exponent.
2. **WRITING** Explain what it means for terms to be like terms.
3. **ERROR ANALYSIS** Describe and correct the error in evaluating the power shown at the right.

$$-3^4 = 81 \quad \text{✗}$$

EVALUATING POWERS Evaluate the power.

- | | | | |
|--------------|--------------|--------------|--------------|
| 4. 2^3 | 5. 3^4 | 6. 4^3 | 7. 7^2 |
| 8. -5^2 | 9. -2^5 | 10. -8^3 | 11. -10^4 |
| 12. $(-3)^2$ | 13. $(-4)^3$ | 14. $(-2)^8$ | 15. $(-8)^2$ |

EXAMPLE 1

on p. 10
for Exs. 4–15