

Now we can use the estimates for the cost of one ream of paper and one cartridge of ink to estimate the total amount spent on each item. To estimate the cost of 6 reams of paper, we can multiply \$4 by 6. To estimate the cost of 8 cartridges of ink, we can multiply \$30 by 8. Then, to estimate the total cost of all the supplies, we find the sum of these two products.

$$\begin{aligned} 6 \cdot \$4 + 8 \cdot \$30 &= \$24 + \$240 && \text{Following the order of operations, multiplication must be done before addition.} \\ &= \$264 \end{aligned}$$

So Frances will need approximately \$264 to buy the office supplies.

1.R.3 Exercises

Concept Check

True/False. Determine whether each statement is true or false. If a statement is false, explain how it can be changed so the statement will be true. (**Note:** There may be more than one acceptable change.)

1. Nine squared is equal to eighteen.
2. $2^7 = 128$
3. 7^0 is undefined.
4. According to the order of operations, multiplication is always performed before division.

Practice

For each exponential expression **a.** identify the base, **b.** identify the exponent, and **c.** evaluate the exponential expression.

5. 2^3

6. 4^0

Simplify.

7. $18 \div 2 - 1 - 3 \cdot 2$

8. $30 \div 2 - 11 + 2(5 - 1)^3$

Applications

Solve.

9. Neville bought 15 boxes of trading cards. Each box has 10 packs of trading cards. Each pack of trading cards contains 20 cards. He adds 132 cards that he already owns to the newly purchased cards. Then, Neville evenly distributes all of the cards to 6 of his friends. How many trading cards would each person get?
- a. If you simplify the expression $15 \cdot 10 \cdot 20 + 132 \div 6$ using the order of operations, will you get the correct answer? If not, explain what is wrong with the expression.
- b. What is the answer? If necessary, write the corrected expression to get the correct results when following the order of operations.
10. Robert is purchasing shirts for his weekend soccer team. The shirts he wants to buy are normally \$25 each but are on sale for \$10 off. His team has a total of 11 players. How much will he spend to buy the shirts?
- a. If you simplify the expression $\$25 - \$10 \cdot 11$ using the order of operations, will you get the correct answer? If not, explain what is wrong with the expression.
- b. What is the answer? If necessary, write the corrected expression to get the correct results when following the order of operations.

Writing & Thinking

11. Give one example where addition should be completed before multiplication.