REVIEW: Counting Principle

Key Concept and Vocabulary

Event 1 can occur in m ways.
Event 2 can occur in n ways.

Event 1 followed by Event 2
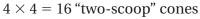can occur in $m \times n$ ways.

Multiply.

Counting Principle

Visual Model

4 flavor choices for 1st scoop

4 flavor choices for 2nd scoop

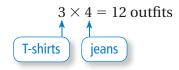$4 \times 4 = 16$ "two-scoop" cones

Skill Example

1. Event 1 can occur in 6 ways.
Event 2 can occur in 3 ways.

Event 1 followed by Event 2
can occur in

$$6 \times 3 = 18 \text{ ways.}$$

Application Example

2. How many outfits can you make using
3 T-shirts and 4 pairs of jeans?

$$3 \times 4 = 12 \text{ outfits}$$

T-shirts   jeans

⋮ You can make 12 different outfits.

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Check your answers at BigIdeasMath.com.

Find the number of ways that Event 1 can occur followed by Event 2.

3. Event 1 can occur in 5 ways.
Event 2 can occur in 6 ways.

_____

4. Event 1 can occur in 10 ways.
Event 2 can occur in 3 ways.

_____

5. Event 1 can occur in 11 ways.
Event 2 can occur in 11 ways.

_____

6. Event 1 can occur in 14 ways.
Event 2 can occur in 4 ways.

_____

Find the number of ways that Event 1 can occur followed by Event 2, followed by Event 3.

7. Event 1 can occur in 2 ways.
Event 2 can occur in 4 ways.
Event 3 can occur in 5 ways.

_____

8. Event 1 can occur in 8 ways.
Event 2 can occur in 7 ways.
Event 3 can occur in 6 ways.

_____

9. **OUTFITS** How many different
outfits can you make using
the T-shirts and jeans shown
at the right? _____

10. **OUTFITS** How many of the outfits
have the gray jeans? _____

Topic 20.2