Questions on Homework?

Mar 2-8:46 PM

Use the Venn diagram to answer the questions below.

1. A and C =   4, 5
2. C and A and B = 4
3. A or C = 1 2 3 4 5 7 8 9
4. C or B = 5, 4, 7, 8, 1, 3, 6, 0
5. B and C = 4, 7
6. not A = 0, 6 — 9
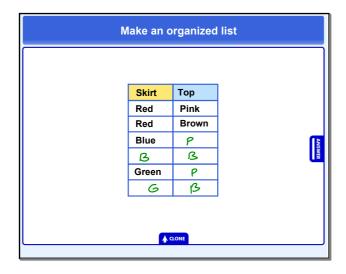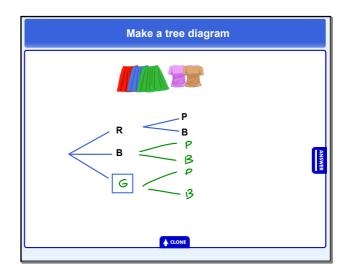7. not C = 1 2 3 6 0
8. A = 1—5

Sep 8-9:25 PM

1.2 Learning Targets

• I can use the Fundamental
Counting Principle to determine
the number of outcomes.
• I can create tree diagrams to
represent outcomes for a series
of events.

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What shall I wear?

3·2

Jennifer has 3 skirts and 2 tops.
How many different outfits could she wear?

Page 2

Make an organized list

Skirt	Top
Red	Pink
Red	Brown
Blue	P
B	B
Green	P
G	B

Page 3

Make a tree diagram

```
                    P
            R  
                    B
                    P
            B  
                    B
                    P
            G  
                    B
```

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How many outfit choices now?

3·4
= 12
outfits

Page 5

Solution

There are 12 outfit choices.

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Calculating the total number of outcomes

Event 1		Event 2	# Outcomes
2 skirts	.	3 tops	6
3 skirts	.	4 tops	12
3 breads	.	5 fillings	? 15
12 flavors	.	6 toppings	? 72

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Find the total number of outcomes

Flip a coin and roll a dice

6 · 2 = 12

Spin the spinner, roll a dice

6 · 8 = 48

Roll two six-sided dice

6 · 6 = 36

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How many different dinner choices are there?

Sides	Plates	Desserts
Onion Soup	Steak tips	Ice Cream
Greek salad	Chicken Pie	Canolis
French Fries	Lasagne	
	Cheeseburger	
	Burritos	

3 · 5 · 2 = 30

You must choose 1 side, 1 plate and 1 dessert

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Fundamental Counting Principle

If one event occurs in *m* ways an another event occurs in *n* ways, then the number of ways that both events occur is *m*n*

Example:
How many 4 letter code words are possible using just the first 6 letters of the alphabet?

(ABCDEF)

6 · 6 · 6 · 6 = 1,296 code words

How many code words are possible if no letter can be repeated?

6 · 5 · 4 · 3 = 360 code words

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2

Fundamental Counting Principle

A multiple choice test with 10 questions and each question has options A-D, how many different ways can the test be answered?

$$\underline{4} \cdot \underline{4} \cdot \underline{4} \cdot \underline{4} \cdot \underline{4} \cdot \underline{4} \cdot \underline{4} \cdot \underline{4} \cdot \underline{4} \cdot \underline{4}$$

$$= 4^{10} = 1048576$$

How many of these ways actually has all the correct answers?

"and" multiply
"or" add

1

Mar 2-8:58 PM

Factorials

4 students in 4 chairs example

$$\underline{4} \cdot \underline{3} \cdot \underline{2} \cdot \underline{1} = 24$$

n Factorial: The number of ways in which one can arrange n distinct objects such that every object is used (n! is found by multiplying all of the numbers starting with n and going down to 1).

$$n! \quad 4!$$

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Factorials

How many ways can 6 different books be positioned on a shelf?

$$\underline{6} \cdot \underline{5} \cdot \underline{4} \cdot \underline{3} \cdot \underline{2} \cdot \underline{1}$$

$$6! = 720$$

How many ways can the letters HIJKLMN be arranged?

$$7! = 5040$$

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Ways to Count

1. Use a Venn Diagram and count

2. Draw a tree diagram and count.

3. Fundamental Counting Principle

4. Factorial

5. Make an organized list and count (dice chart).
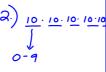
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Assignment:

Sec. 1.2   #1-16, 19-24

• I can use the Fundamental Counting Principle to determine the number of outcomes.

• I can create tree diagrams to represent outcomes for a series of events.

2.) $10 \cdot 10 \cdot 10 \cdot 10 \cdot 10$

$\downarrow$

$0-9$

Mar 2-9:24 PM

Attachments

Organized_lists.pdf