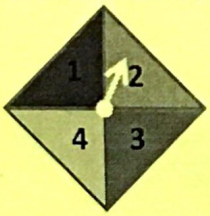
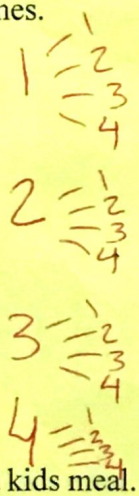
TREE DIAGRAMS & Fundamental Counting Principle HELP SHEET

EXAMPLES:

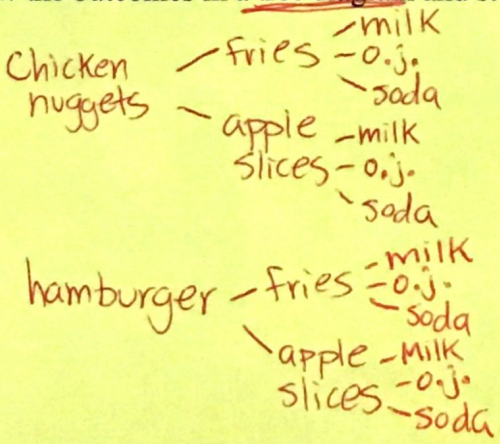
1. I spun this spinner twice How many possible outcomes are there? Show the outcomes in a tree diagram and state the number of outcomes.





16 outcomes

2. I went to McDonalds to buy a kids meal. I could pick from chicken nuggets or a hamburger; fries or apple slices for the side; and milk, orange juice or soda to drink. How many different outcomes are there? Show the outcomes in a tree diagram and state the number of outcomes.



12 outcomes

3. I roll a 6-sided die, an 8-sided die, and a 6-sided spinner. How many possible outcomes are there? Use the fundamental counting principle to state the possible outcomes.

$6 \times 8 \times 6 =$ 288 outcomes

Simple Probability HELP SHEET

Example: 1st Find out how many total items you have.

Ella has a jar of coins. She has 8 quarters, 4 dimes, 6 nickels and 10 pennies. Find the fraction, decimal and percent of each probability. 28 total coins

1. P(dime or nickel) $\frac{10}{28} = \frac{5}{14}$, .36, 36%
   4 + 6 = 10

2. P(nickel) $\frac{6}{28} = \frac{3}{14}$, .21, 21%

3. P(quarter or penny) $\frac{18}{28} = \frac{9}{14}$, .64, 64%
   8 + 10 = 18

4. P(quarter) $\frac{8}{28} = \frac{2}{7}$, .29, 29%

★ To go from a fraction to a decimal...
- → Enter the top # ÷ botton #
- → Round to the hundredths

★ To go from a decimal to a percent...
- → Move the decimal <u>two</u> places to the right, or multiply by 100

COMPOUND Probability HELPSHEET

EXAMPLE:

When an item is REPLACED it is put back in to the pile before the next item is drawn

Alex has a jar of coins. He has 6 quarters, 7 dimes, 5 nickels and 12 pennies. A coin is selected and REPLACED before another coin is drawn. 30 total coins

1. P(quarter, nickel, and penny) $\frac{1}{75}$

$\frac{6}{30} \times \frac{5}{30} \times \frac{12}{30}$

Simplified $\frac{1}{5} \times \frac{1}{6} \times \frac{6}{15} = \frac{6}{450} = \frac{1}{75}$

2. P(penny, penny, quarter) $\frac{4}{125}$

$\frac{12}{30} \times \frac{12}{30} \times \frac{6}{30}$

Simplified $\frac{6}{15} \times \frac{6}{15} \times \frac{1}{5} = \frac{36}{1125} = \frac{4}{125}$

3. P(a dime twice) $\frac{49}{900}$

$\frac{7}{30} \times \frac{7}{30} = \frac{49}{900}$

4. P(nickel, penny, dime) $\frac{4}{900}$

$\frac{5}{30} \times \frac{12}{30} \times \frac{7}{30}$

Simplified $\frac{1}{6} \times \frac{6}{15} \times \frac{7}{30} = \frac{42}{2700} = \frac{14}{900}$

Alex has a jar of coins. He has 6 quarters, 7 dimes, 5 nickels and 12 pennies. A coin is selected and NOT REPLACED before another coin is drawn.

When an item is NOT Replaced it is not put back in the pile so the total begins to decrease.

5. P(quarter, dime and nickel) $\frac{1}{116}$

$\frac{6}{30} \times \frac{7}{29} \times \frac{5}{28}$

Simplified $\frac{1}{5} \times \frac{7}{29} \times \frac{5}{28} = \frac{35}{4060} = \frac{7}{812} = \frac{1}{116}$

6. P(quarter, dime and quarter) $\frac{1}{116}$

$\frac{6}{30} \times \frac{7}{29} \times \frac{5}{28}$

$\frac{1}{5} \times \frac{7}{29} \times \frac{5}{28} = \frac{35}{4060} = \frac{7}{812} = \frac{1}{116}$

7. P(penny, penny, and nickel) $\frac{11}{406}$

$\frac{12}{30} \times \frac{11}{29} \times \frac{5}{28}$

$\frac{6}{15} \times \frac{11}{29} \times \frac{5}{28} = \frac{330}{2180} = \frac{33}{1218} = \frac{11}{406}$

8. P(nickel and penny) $\frac{2}{29}$

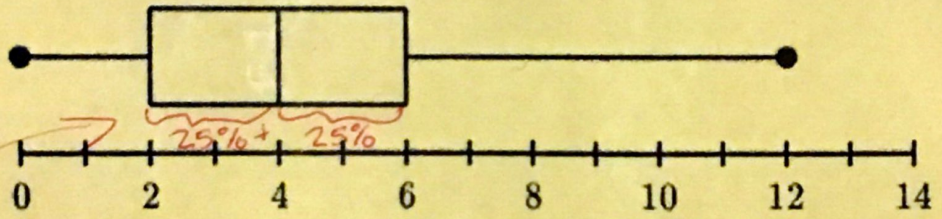
$\frac{5}{30} \times \frac{12}{29}$

$\frac{1}{6} \times \frac{12}{29} = \frac{12}{174} = \frac{2}{29}$

Reading Box-and-Whisker Plots HELP SHEET

I surveyed my students to see how many pencils they keep in their backpack. The following box-and-whisker shows the information that I found.

Number of pencils that a student carries in their backpack



1. What percent of students carry between 2 and 6 pencils in their backpack? 50%

2. What number represents the 3rd Quartile (upper)?

   6 pencils

3. If 26 students were surveyed, how many of those students carry less than 4 pencils in their backpack?

   Less than 4 pencils is 50%

   50% of 26 is 13

4. What percent of students carry 2 or more pencils in their backpack?

   75%

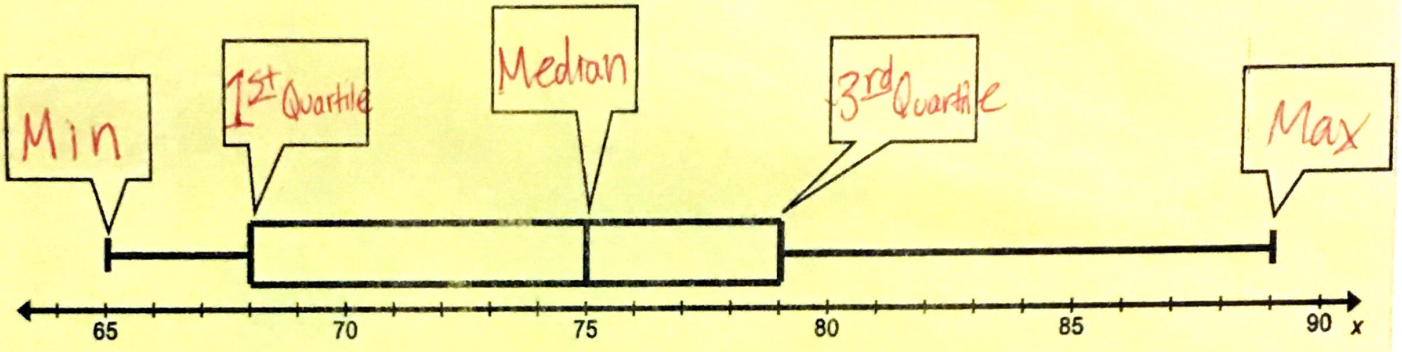
5. Out of the students surveyed, what is the largest amount of pencils that one student carried in their backpack?

   12 pencils

Reading Box-and-Whisker Plots HELP SHEET

Box-&-Whisker Plots

Uses five important numbers from a set of data to show the general trends of the data.



- **Minimum:** The smallest number
- **1st Quartile (Lower Quartile):** The middle # between the min and median
- **Median:** The middle number
- **3rd Quartile (Upper Quartile):** The middle # between the median and max
- **Maximum:** The largest #

What percentage of the data does each piece of the box and whisker represent?

Between min & 1st Quartile 25%

Between 1st Quartile & median 25%

Between median & 3rd Quartile 25%

Between 3rd Quartile & max 25%

Mean, Median, Mode, Range HELP SHEET

FOR EXAMPLE:

#1.

~~46~~, ~~41~~, ~~34~~, ~~56~~, ~~34~~, ~~40~~, ~~37~~, ~~25~~, ~~28~~

Put in order from least to greatest...

25, 28, 34, 34, 37, 40, 41, 46, 56

Mean: 46+41+34+56+34+40+37+25+28= 341÷9=37.9

Median: 37

Mode: 34 ← the only # that repeats

Range: 56-25=31

#2.

~~75~~, ~~79~~, ~~81~~, ~~83~~, ~~84~~, ~~75~~, ~~82~~, ~~88~~, ~~89~~, ~~93~~

Put in order from least to greatest...

75, 75, 79, 81, 82, 83, 84, 88, 89, 9

Mean: 75+79+81+83+84+75+82+88+89 829÷10=82.

Median: (82+83)/2 = 82.5

Mode: 75 ← the only # that repeats

Range: 93-75=18

Mean: Add all of the numbers together and divide by how many numbers are there

Median: Put the numbers in order from least to greatest. Then, find the middle number.

Mode: the number that **shows** up the most.

Range: The difference (subtract) between the largest number and the smallest number

MAKING a Box-and-Whisker Plot HELP SHEET

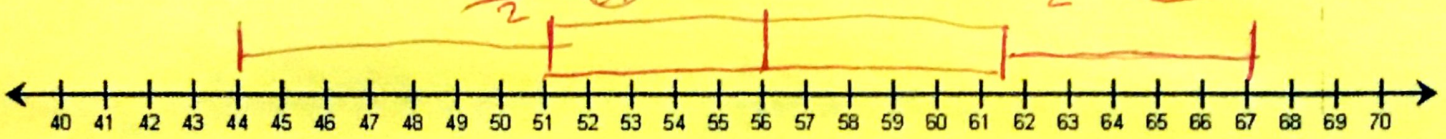
EXAMPLE #1:

44, 65, 45, 67, 49, 53, 56, 54, 61, 55, 58, 62, 57

44, 45, 49, 53, 54, 55, 56, 57, 58, 61, 62, 65, 67

Median

$\frac{49+53}{2} = 51$ $\quad\quad$ $\frac{61+62}{2} = 61.5$



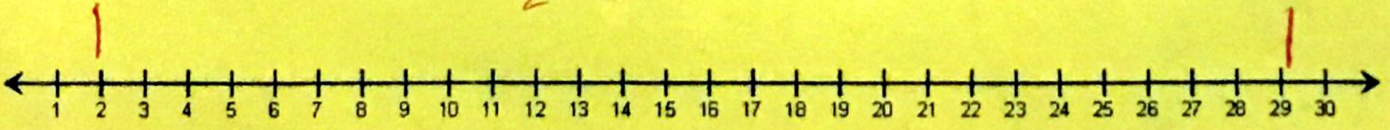
1. Minimum 44 (smallest #)
2. Maximum 67 (biggest #)
3. Median 56
4. 1st Quartile (lower) 51
5. 3rd Quartile (upper) 61.5
6. Interquartile Range $61.5 - 51 = 11.5$

EXAMPLE #2:

2, 27, 29, 17, 15, 11, 6, 24, 8

2, 6, 8, 11, 15, 17, 24, 27, 29

$\frac{6+8}{2} = 14$ $\quad\quad$ $\frac{24+29}{2} = 25.5$

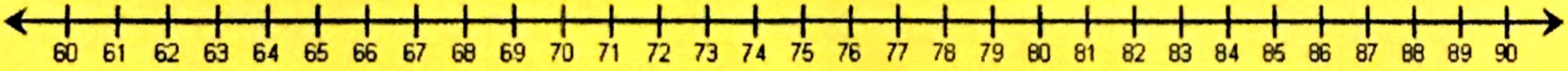


7. Minimum 2
8. Maximum 29
9. Median 15
10. 1st Quartile (lower) 14
11. 3rd Quartile (upper) 25.5
12. Interquartile Range $25.5 - 14 = 11.5$

89, 75, 90, 64, 77, 83, 72, 78

64, 72, 75, 77, 78, 83, 89, 90

$\frac{72+75}{2} = 73.5$ $\frac{77+78}{2} = 77.5$ $\frac{83+89}{2} = 86$



13. Minimum 64

14. Maximum 90

15. Median 77.5

16. 1st Quartile (lower) 73.5

17. 3rd Quartile (upper) 86

18. Interquartile Range 86 - 73.5 = 12.5