

Warm-Up

1.  $\$7.00 - \$4.93$

Grade 8

2.  $3 + 4^2$

3. If 20% of a number is 19.  
What is the number?

Questions??

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$$\begin{aligned}
 14) a) \quad -5x - 7 &= 18 \\
 -5x - 7 + 7 &= 18 + 7 \\
 -5x &= 25 \\
 \frac{-5x}{-5} &= \frac{25}{-5} \\
 x &= -5
 \end{aligned}$$

$$\begin{aligned}
 b) \quad 4(s-6) &= -52 \\
 4s - 24 &= -52 \\
 4s - 24 + 24 &= -52 + 24 \\
 4s &= -28 \\
 \frac{4s}{4} &= \frac{-28}{4} \\
 s &= -7
 \end{aligned}$$

$$\begin{aligned}
 11) \quad \frac{t}{-12} &= -8 \\
 -12 \times \frac{t}{-12} &= -8 \times -12 \\
 t &= +96
 \end{aligned}$$

$$\begin{aligned}
 d) \quad \frac{f}{8} + 9 &= 4 \\
 \frac{f}{8} + 9 - 9 &= 4 - 9 \\
 \frac{f}{8} &= -5 \\
 8 \times \frac{f}{8} &= -5 \times 8 \\
 \boxed{f = -40}
 \end{aligned}$$

$$\begin{array}{l}
 15) \quad \begin{array}{|c|} \hline 8 \\ \hline \begin{array}{|c|} \hline 6 \times 8 \\ = 48 \\ \hline x \quad 8x \\ \hline \end{array} \\ \hline \end{array} \quad 8x + 48 \\
 \text{or} \\
 8(x + 6)
 \end{array}$$

$$\begin{aligned}
 16) \quad -2(x+11) &= -4 \\
 -2x - 22 &= -4 \\
 -2x - 22 + 22 &= -4 + 22 \\
 -2x &= 18 \\
 \frac{-2x}{-2} &= \frac{18}{-2} \\
 \boxed{x = -9}
 \end{aligned}$$

$$\begin{array}{l}
 17a) \begin{pmatrix} 2 \\ x \end{pmatrix}, \begin{pmatrix} \_ \\ y \end{pmatrix} \\
 y = -9x + 5 \\
 y = -9(2) + 5 \\
 y = -18 + 5 \\
 y = -13
 \end{array}
 \quad
 \begin{array}{l}
 b) \begin{pmatrix} \_ \\ x \end{pmatrix}, \begin{pmatrix} 5 \\ y \end{pmatrix} \\
 y = -9x + 5 \\
 5 = -9x + 5 \\
 5 - 5 = -9x + 5 - 5 \\
 0 = -9x \\
 \frac{0}{-9} = \frac{-9x}{-9} \\
 \boxed{0 = x}
 \end{array}
 \quad
 \begin{array}{l}
 c) \begin{pmatrix} -3 \\ x \end{pmatrix}, \begin{pmatrix} \_ \\ y \end{pmatrix} \\
 y = -9x + 5 \\
 y = -9(-3) + 5 \\
 y = +27 + 5 \\
 y = 32
 \end{array}
 \end{array}$$

$$\begin{array}{l}
 a) \begin{pmatrix} \_ \\ x \end{pmatrix}, \begin{pmatrix} -31 \\ y \end{pmatrix} \\
 y = -9x + 5 \\
 -31 = -9x + 5 \\
 -31 - 5 = -9x + 5 - 5 \\
 -36 = -9x \\
 \frac{-36}{-9} = \frac{-9x}{-9} \\
 \boxed{4 = x}
 \end{array}$$

$$18) p = 3n + 50$$

ice cream (n)	Pay \$
0	50
1	53
2	56
3	59
4	62
	65

$3(0) + 50$   
 $3(1) + 50$   
 $3(2) + 50$

b) 45 ice cream ← this is "n"

$$\begin{array}{l}
 p = 3n + 50 \\
 = 3(45) + 50 \\
 = 135 + 50 \\
 = \$185
 \end{array}$$

If she sold 45 ice cream  
She earned \$185

c) \$260 is a P

$$260 = 3n + 50$$

$$260 - 50 = 3n + 50 - 50$$

$$210 = 3n$$

$$\frac{210}{3} = \frac{3n}{3}$$

$$\boxed{70 = n}$$

To make \$260  
she needs to  
sell 70 ice cream

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$$15a) \quad 4(13+3d)$$

$$13(4) + 3d(4)$$

$$52 + 12d$$

$$b) \quad -7(5-6c)$$

$$-35 + 6c$$

$$c) \quad 8(-9d+7)$$

$$-72d + 56$$

$$d) \quad 6(8e-1)$$

$$48e - 6$$

16) My work

$$3x + 5 = -7$$

$$3x + 5 - 5 = -7 - 5$$

$$3x = -12$$

$$\frac{3x}{3} = \frac{-12}{3}$$

$$x = -4$$

a) Felix should have move all constants to one side at the beginning.

b) He got the right solution

c) B/c he collected the constants on left side then moved to the Right

17)  $y = -3x$

x	-2	-1	0	1	2
y	6	3	0	-3	-6

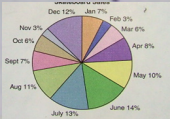

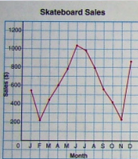
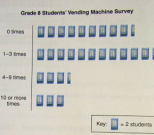
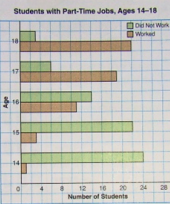
b)  $y = -x + 3$

x	-2	-1	0	1	2
y	5	4	3	2	1

$$\left. \begin{array}{l} -(-2) + 3 \\ +2 + 3 \\ +5 \end{array} \right\} \left. \begin{array}{l} -(-1) + 3 \\ +1 + 3 \end{array} \right\} - (0) + 3$$

# Choosing an Appropriate Graph

Also see page for more examples

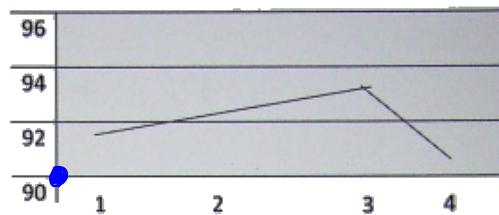
Type of Graph	Strengths	Limitations
<b>Circle Graph</b> 	<ul style="list-style-type: none"> <li>Shows parts of a whole</li> <li>Shows <u>percents of the total</u></li> <li>Sizes of sectors compare parts of the whole</li> </ul>	<ul style="list-style-type: none"> <li>Does not show data values and the total</li> <li>Difficult to draw accurately</li> </ul>
<b>Bar Graph</b> 	<ul style="list-style-type: none"> <li>Lengths of bars compare data values</li> <li>Scale can be used to find the total</li> <li>Easy to draw</li> </ul>	<ul style="list-style-type: none"> <li>May be difficult to read depending on scale used</li> <li>Does not show percents of the total for comparison</li> </ul>
<b>Line Graph</b> 	<ul style="list-style-type: none"> <li>Easy to draw and to read</li> <li>Shows data changes over time</li> <li>Can be used to estimate values between or beyond data points</li> </ul>	<ul style="list-style-type: none"> <li>Does not show parts of a whole</li> <li>Zig-zag pattern can be difficult to interpret</li> </ul>
<b>Pictograph</b> page 384 	<ul style="list-style-type: none"> <li>Lengths of rows of symbols compare data values</li> <li>Graph is visually appealing</li> <li>Key can be used to find the total</li> </ul>	<ul style="list-style-type: none"> <li>Large number of symbols make it difficult to read</li> <li>Does not show parts of a whole</li> <li>Difficult to draw</li> </ul>
<b>Double Bar Graph</b> 	<ul style="list-style-type: none"> <li>Directly compares two sets of data</li> <li>Lengths of bars compare data values</li> <li>Scale can be used to find the total of each data set</li> <li>Easy to draw</li> </ul>	<ul style="list-style-type: none"> <li>Can only be used to show discrete data</li> <li>May be difficult to read depending on scale used</li> <li>Two sets of data in one graph can be confusing</li> </ul>

What graph would you use to represent the data below and explain their choice.

1. The average monthly temperatures for New Brunswick and Ontario for the past year. *Double line or Double bar*
2. Prices of different brands of athletic shoes. *line or*
3. The *Circle* percentage of Grade 8 students involved in various after school activities.
4. The favourite type of cell phone for teens. *Bar*

The graph and the table below represent Elizabeth's scores in science for each report card.

Term	%
1	92
2	93
3	94
4	89



- A. This graph is poorly constructed. What should be changed or added to make the graph more accurate?

Should start vertical axis  
at zero

- B. Do you think Elizabeth should be worried about her scores? Explain your reasoning.

No, all are  
high marks  
(A)

**Theoretical Probability:** the number of favorable outcomes written as a fraction of the total number possible outcomes.

BBB  
GGY  
RRR

$$P(Y,Y,Y) = P(Y) \times P(Y) \times P(Y)$$

$$= \frac{1}{10} \times \frac{1}{10} \times \frac{1}{10}$$

$$= \frac{1}{1000}$$

$$P(\text{of Event}) = \frac{\# \text{ of favourable outcomes}}{\# \text{ of possible outcomes}}$$

$$P(Y) = \frac{\# Y}{\text{total}} = \frac{1}{10}$$

$$P(R) = \frac{4}{10} = \frac{2}{5}$$

$$P(Y \text{ and } R) = P(Y) \times P(R)$$

$$= \frac{1}{10} \times \frac{2}{5}$$

$$= \frac{2}{50} = \frac{1}{25}$$

**Independent Events:** the outcome of one event has no effect on the outcome of another.

Ex: Tossing a coin and rolling a 5 on a die

**Dependent Events:** the outcome of the second event is affected by the first.

Ex: Selecting a heart from a deck of cards, not replacing the card, and then selecting another heart.

The rule for two independent events:

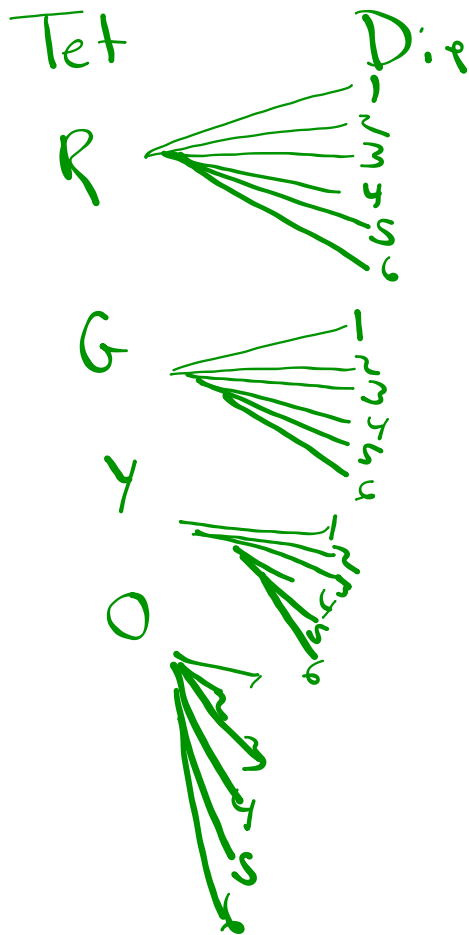
$$P(A \text{ and } B) = P(A) \times P(B)$$



Describe whether the following events (A and B) are independent or dependent and explain your thinking.

1. A = Mrs. Brown's first child is a boy.  
B = Mrs. Brown's second child will be a boy.
2. A = It snowed last night.  
B = Jon will be late for school this morning.
3. A = Lee swam 2 hours every day for the last ten months.  
B = Lee's swimming times have improved.
4. A = Allison got an A on her last math test.  
B = Allison got an A on her next math test.
5. A = Matthew tossed a head with his last coin toss.  
B = Matthew will toss a head in his next coin toss.

A) Use a Tree Diagram to find all the outcomes of tossing one coin and rolling a tetrahedral die that has red, green, yellow, orange as colours



R1  
R2  
R3  
R4  
R5  
R6

G1  
G2  
G3  
G4  
G5  
G6

Y1  
Y2  
Y3  
Y4  
Y5  
Y6

O1  
O2  
O3  
O4  
O5  
O6

24 outcomes

A large basket of fruit contains 5 oranges, 3 apples, and 6 bananas. If a piece of fruit is chosen at random what is the probability of getting an orange or a banana?

Express your answer in fraction, decimal, and percent form.

$$\text{Total fruit} = 14$$

$$P(\text{Orange or Ban}) = \frac{\# \text{ of orange or Ban}}{\text{total}} = \frac{11}{14} = 0.79 = 79\%$$

$$\begin{aligned} P(O \text{ and } B) &= P(O) \times P(B) \\ &= \frac{5}{14} \times \frac{6}{14} \\ &= \frac{30}{196} \text{ Reduce} \\ &= \frac{15}{98} \end{aligned}$$

Keith wrote a different number from one to ten on each of ten small pieces of paper and put them in a bag. He drew one number from the bag. At the same time, he tossed a coin. Use two different methods to determine the total number of possible outcomes.

$$\begin{aligned} \# \text{ of possible } &= 10 \\ &\times \\ &= 2 \end{aligned}$$

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$$20 \text{ total}$$

At the cafeteria, you can choose: milk, water, or juice to drink; a ham or turkey sandwich; and apple, cherry, or pumpkin pie for dessert. What is the probability that a student will have a turkey sandwich with milk and cherry pie?

$$\begin{aligned} P(T, M, C) &= P(T) \times P(M) \times P(C) \\ &= \frac{1}{2} \times \frac{1}{3} \times \frac{1}{3} \\ &= \frac{1}{18} \end{aligned}$$

# Practice Questions

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