Name: _____ **Date:** _____

Convert Fractions to Percents

To convert a fraction to a percent, convert the fraction to a decimal number.

Then, multiply by 100%.

$\frac{3}{4} = 0.75$

$= 0.75 \times 100\%$

To multiply by 100, move the decimal point two places to the right.

$= 75\%$ **C 3 ÷ 4 × 100 = 75.**

1. Write each fraction as a decimal number.

a) $\frac{1}{2}$ **b)** $\frac{2}{5}$

c) $\frac{7}{10}$ **d)** $\frac{1}{4}$

2. Show each fraction in #1 as a percent.

3. Write each fraction as a decimal number, and then as a percent.

a) $\frac{12}{16}$ **b)** $\frac{17}{20}$

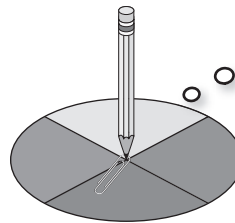**c)** $\frac{9}{24}$ **d)** $\frac{18}{36}$

Identify Outcomes of a Single Event

An **outcome** is one possible result of an experiment.

You spin the spinner once. The possible outcomes are red, blue, yellow, and purple.

These outcomes are all **equally likely**. Each outcome has the same chance of occurring.

All four sections of the spinner are the same size.

4. Identify all the possible outcomes for each event. Are the outcomes all equally likely?
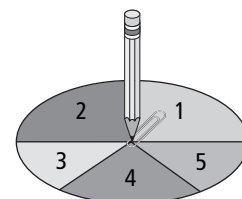
a) Toss a coin.

b) Collect 3 blue, 2 red, and 1 yellow marker. Choose a marker.

5. Identify all the possible outcomes for each event. Are the outcomes all equally likely?

a) Roll a die.

b) Spin the spinner.

6. Identify all the possible outcomes for each event. Are the outcomes all equally likely? Draw a diagram if it helps you.

  a) A jar of craft beads contains 5 red, 4 black, 4 yellow, 6 orange, and 5 green beads. You choose one bead.

b) Stan comes to a fork in the road. There are three paths: Hiker's Lane, Ambler's Alley, and Wilderness Walk. He chooses one path.

Read and Interpret Tally Charts

The **tally chart** shows the numbers of ducks Brian counted one afternoon at a Saskatchewan wetland.

Brian saw 9 Canvasbacks, 7 Redheads, 36 Mallards, 28 Pintails, and 14 Gadwalls.

Type of Duck	Tally
Canvasback	‖‖‖ ‖‖‖
Redhead	‖‖‖ ‖‖
Mallard	‖‖‖ ‖‖‖ ‖‖‖ ‖‖‖ ‖‖‖ ‖‖‖ ‖‖‖ ‖
Pintail	‖‖‖ ‖‖‖ ‖‖‖ ‖‖‖ ‖‖‖ ‖‖‖
Gadwall	‖‖‖ ‖‖‖ ‖‖‖

‖‖‖ means 5

7. Grade 7 students were surveyed about their favourite pets. The tally chart shows the results of the survey.

Type of Pet	Tally
Cat	‖‖‖ ‖‖‖ ‖‖‖
Dog	‖‖‖ ‖‖‖ ‖‖‖
Fish	‖‖‖ ‖‖‖ ‖
Hamster	‖‖‖‖
Bird	‖‖‖ ‖‖

  a) What was the most popular type of pet?

  b) How many chose cat as their favourite?

  c) How many students were surveyed altogether?

8. Callie and Brody create the following tally chart to keep track of the items they sell during a Scottish festival.

	Caps	Kilts
Friday	‖‖‖ ‖‖‖ ‖‖	‖‖‖
Saturday	‖‖‖ ‖‖‖ ‖‖‖ ‖‖‖	‖‖‖ ‖‖‖
Sunday	‖‖‖ ‖	‖‖

  a) How many caps did they sell on all three days?

  b) On which day did they sell the most kilts?

  C) Which item did they sell the least of on Friday?

5.1 Probability

MathLinks 7, pages 158–164

Key Ideas Review

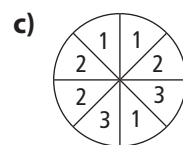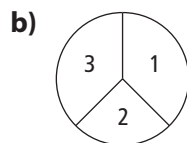*Write the word or number from column B that matches each description in column A.*

| A	B
1. Probability = _____ outcomes _____ outcomes **2.** Probability can be written as a _____ , _____ , or _____ . **3.** The probability of a certain event is _____ or _____ . **4.** The probability of an impossible event is _____ or _____ .	**a)** 100% **b)** 0 **c)** ratio **d)** 0% **e)** fraction **f)** possible **g)** 1 **h)** favourable **i)** percent **j)** chance

Practise and Apply

5. What is the probability of each of the following spinners landing on 3? Write your answer as a fraction, a ratio, and a percent.
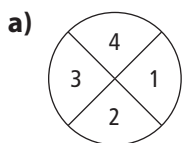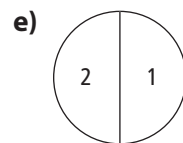
a)

Fraction: _____
Ratio: _____
Percent: _____

b)

Fraction: _____
Ratio: _____
Percent: _____

c)

Fraction: _____
Ratio: _____
Percent: _____
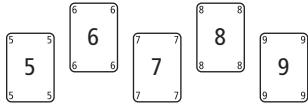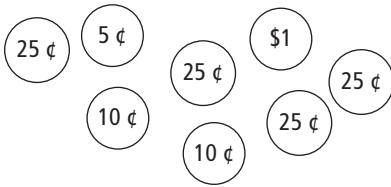
d)

Fraction: _____
Ratio: _____
Percent: _____

e)

Fraction: _____
Ratio: _____
Percent: _____

Name: _____   **Date:** _____
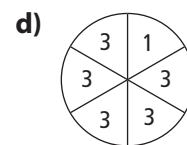
6. You have the following number cards in your hand. You randomly choose a card.

5 6 7 8 9

a) How many outcomes are possible?

b) What is the probability of choosing a 7? Express your answer as a ratio, a fraction, and a percent.

7. Matt has these coins in the pocket of his jeans.

25¢ 5¢ 25¢ $1 25¢ 10¢ 25¢ 10¢

He takes one coin out of his pocket. Write each answer as a ratio, a fraction, and a percent.

a) What is P(quarter)?

b) What is P(dime *or* quarter)?

c) What is the probability that the loonie is *not* picked?

8. Jules has nine miniature cars in a bag. There are three blue cars, four red cars, and two yellow cars. She chooses one car from the bag. Write each answer as a fraction, a ratio, and a percent.

a) What is P(red car)?

b) What is P(blue car *or* red car *or* yellow car)?

9. Mr. Pyed uses a 12-sided die with the numbers from 1 to 12 to pick the activity for intramurals on Fridays. Write each answer as a fraction, a ratio, and a percent.

a) If he rolls a multiple of 3, the students will play 3-on-3 basketball. What is the probability that the class will play basketball on Friday?

b) If he rolls a prime number, the students will play indoor baseball. What is P(baseball)?

5.2 Organize Outcomes

MathLinks 7, **pages 165–170**

Key Ideas Review

Choose from the following terms to complete #1 and #2.

dependent   independent   other diagrams   sample space   tables   tree diagrams
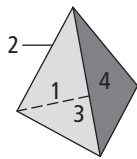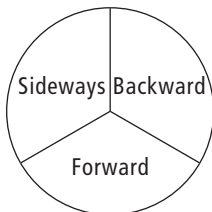
1. Complete the statement.

   Two events are _____ if the outcome of one event has no effect on the outcome of the other event.

2. To organize outcomes for two independent events, you can create

   a) _____; **b)** _____; **c)** _____

Practise and Apply

3. Dylan spins the spinner and rolls the die to move ahead in the game she is playing.

   a) Organize the outcomes of these two events in a table.

4. Alianna flips a coin and chooses one of four types of school supplies: pencil (p), eraser (e), calculator (c), or ruler (r).

   a) Draw a tree diagram to organize the possible outcomes of these two events.
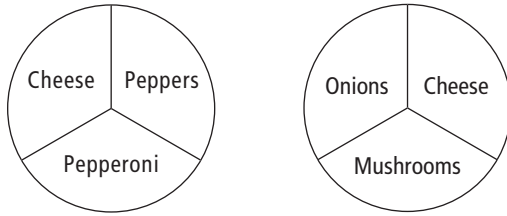
   b) What is the sample space for these two events?

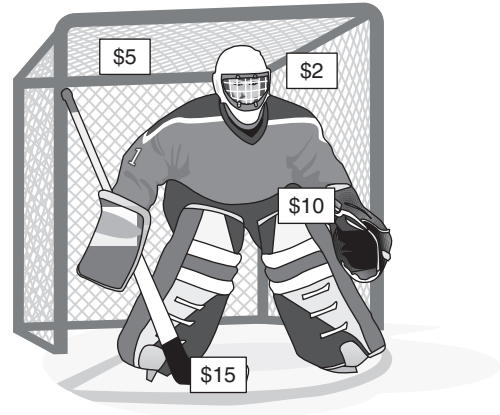   **b)** What is the sample space for these two events?

5. Pete spins two spinners to choose toppings for his pizza.

a) Create a tree diagram or table to show all the possible combinations for two-topping pizzas.

b) What is the sample space?

6. Sanjay is shooting a puck at the net to win a prize.

a) Sanjay shoots two pucks at the net. Create a tree diagram to show the sample space, assuming that he does not miss either shot.

b) What is the probability that Sanjay will win an even amount of money after two shots?

5.3 Probabilities of Simple Independent Events

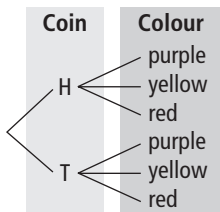*MathLinks 7,* pages 171–176

Key Ideas Review

Choose from the following terms to complete #1 and #2.

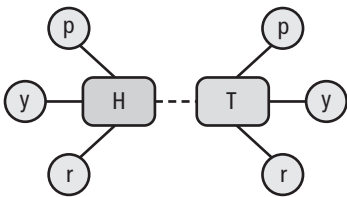| divide | event | favourable | organizer | outcomes | table | tree diagram |

1. Complete the statement.

To find the probability, count the _____ outcomes and

_____ by the number of possible _____ .

2. Label each kind of diagram.

	Purple	**Yellow**	**Red**
Heads	(H, purple)	(H, yellow)	(H, red)
Tails	(T, purple)	(T, yellow)	(T, red)

Coin · Colour tree: H → purple, yellow, red; T → purple, yellow, red

Diagram with p, y, H, T, r nodes

_____   _____   _____

Practise and Apply

3. On Wednesdays, students can order a slice of pizza, a chicken quesadilla, or a garden salad, with a juice box or chocolate milk, for $4 at the cafeteria.

a) Draw a tree diagram to show the sample space.

b) What is the probability of a student ordering a chicken quesadilla and chocolate milk?

4. a) How would you describe two events that might result in the ten outcomes in the table?

AA	AB	AC	AD	AE
ZA	ZB	ZC	ZD	ZE

b) Create one question about the events you chose. Then, answer the question.

5. Blaine and Stacey create spinners about places to live. They spin each spinner once.
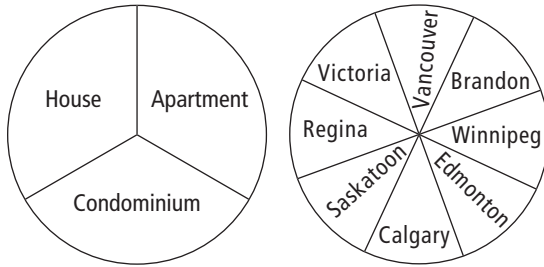
a) Create a table to show the sample space.

b) How many possible outcomes are there?

c) What is *P*(apartment, Victoria)?

d) What is *P*(house *or* condo, Alberta)?

6. The grade 7 students are creating designs using paper folding. They can use only two colours: one base colour and one accent colour. There are four colours to choose from: blue, green, yellow, and red.

a) Draw a tree diagram to show all the possible outcomes for the two colours.

b) What is *P*(red *or* blue, red *or* blue)?

c) If the students are *not* allowed to use the same colours for the base and accent, how many outcomes do they have to choose from?

7. Haley bought a new board game that has a multi-coloured die (blue, green, yellow, red, white, and pink) and a numbered spinner (1, 2, 3, and 4). To move ahead in the game, she must roll the die and spin the spinner.

a) Create a table to show all possible outcomes.

b) What is *P*(blue, 3)?

c) What is *P*(green *or* white *and* even number)?

5.4 **Applications of Independent Events**

MathLinks 7, pages. 177–182

### Key Ideas Review

1. Find the words in the word search.

EVENTS   OUTCOMES
INDEPENDENT   TABLE
ORGANIZE   TREE DIAGRAM

A	H	V	N	G	W	B	F	O	E	C	O
I	E	J	X	C	K	Y	B	L	M	P	U
M	V	T	A	B	L	E	K	Q	Z	N	T
D	E	G	I	R	T	H	U	O	A	D	C
U	N	S	B	W	A	T	Z	R	U	O	O
L	T	R	E	E	D	I	A	G	R	A	M
E	S	F	Y	C	G	S	V	A	J	P	E
D	O	Z	N	X	M	E	L	N	V	E	S
T	K	Y	S	J	F	I	R	I	Q	I	H
A	P	H	B	Q	X	R	C	Z	W	F	G
I	N	D	E	P	E	N	D	E	N	T	D

Practise and Apply

2. Kellie chooses two items of healthy food for her lunch every day. She chooses one drink (juice, water, or milk) and one snack (apple, orange, carrots, or banana).

a) Use a table to organize the outcomes.

b) What is the probability that Kellie's choice will include milk?

c) What is the probability that Kellie's choice will include juice and an orange?

**3.** The Huk family spins two spinners to decide which chores each family member will do for the week.

Bathroom | Dusting
Vacuum

Dishes | Windows
Garbage
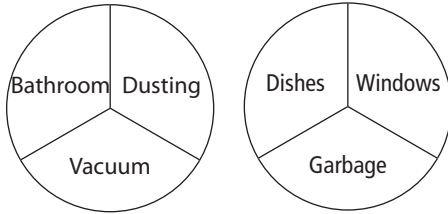
a) Create a tree diagram to organize the sample space.

4. Rob, Anou, and Jessie use a spinner to help them choose whether to watch a movie, play a video game, or go swimming. They spin the spinner twice and add the two numbers. If the result is an even sum, they will watch a movie. If the result is an odd sum, they will play a video game. If the result is a sum of 5 or greater, they will go swimming.

4
3 | 1
2
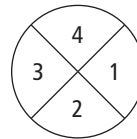
a) Draw a tree diagram showing all the possible outcomes, including the sum of the two numbers spun.

b) What is the probability that a family member will have to dust and do dishes?

c) Which combination of chores would you not want to do? What is the probability of spinning that combination?

b) What is the probability of spinning a sum that is an odd number?

**c)** What result has a greater probability than your answer in b)?

5.5 Conduct Probability Experiments

MathLinks 7, pages 183–189

Key Ideas Review

Determine the column in which each statement belongs. Place an X beside each statement under the correct column.

	Experimental Probability	Theoretical Probability
1. Outcomes that are usually collected in a tally chart and counted at the end of an experiment.		
2. The probability of an event determined from a list of all possible outcomes.		
3. The probability of an event determined from experimental outcomes.		

Practise and Apply

4. A cereal box contains one of four computer games. Kyra uses a spinner to check the experimental probability of finding game 1, game 2, game 3, or game 4 in the box.
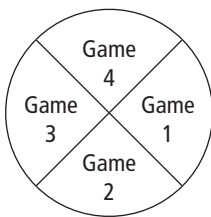
She spins the spinner 100 times. Here are her results.

Spinner Outcome	Number of Results
Game 1	25
Game 2	22
Game 3	26
Game 4	27

a) What is the experimental probability of finding game 2?

b) Calculate the theoretical probability of finding game 2.

c) Compare the experimental and theoretical probabilities.

d) How would your answers to a), b), and c) change if you were using the results for game 1?.

5. Maria is packing art materials in boxes. She puts a package of crayons and a package of pencil crayons in one box, and then a package of crayons and a package of pencil crayons in a second box. You get to pick one package from each box. Use the results from the random generator to check the probability of picking two different types of packages.

	A	B	C
1	crayons 1, pencil crayons 0	First Pick	Second Pick
2	First 2 picks	0	1
3	Second 2 picks	1	0
4	Third 2 picks	1	1
5	Fourth 2 picks	0	0
6	Fifth 2 picks	0	1
7	Sixth 2 picks	0	0
8	Seventh 2 picks	1	0
9	Eighth 2 picks	0	0
10	Ninth 2 picks	1	0
11	Tenth 2 picks	0	1
12	Eleventh 2 picks	1	1
13	Twelfth 2 picks	0	1
14	Thirteenth 2 picks	1	1
15	Fourteenth 2 picks	1	1
16	Fifteenth2 picks	1	1
17	Sixteenth 2 picks	1	0
18	Seventeenth 2 picks	0	0
19	Eighteenth 2 picks	1	1
20	Nineteenth 2 picks	0	0
21	Twentieth 2 picks	0	0
22			
23			

a) What is the experimental probability of picking a package of each type?

b) What is the theoretical probability of picking a package of each type?

c) Compare the experimental probability with the theoretical probability.

6. Conduct a probability experiment to determine the probability of getting 2 tails on 2 coin flips. Record your results for 20 pairs of coin flips.

a) Organize your results in a tally chart.

Coin Outcomes	Experimental Results

b) Write two questions based on your probability experiment. Answer both of your questions.

Link It Together

1. This table shows the number of letters available for a word game. Annika randomly chooses one letter from the box.

A-9	N-6	T-6
D-4	O-8	U-4
H-2	R-6	X-1
I-9	S-4	Z-1

a) How many possible outcomes are there?

b) What is the probability that Annika will get a vowel?

c) What is the probability that Annika will get a consonant?

d) What is the probability that Annika will *not* get an A or I?

2. You choose five letters from the box: A, S, I, T, N.

a) Create a tree diagram showing all the two-letter words you can create that begin with a vowel.

b) Using the two-letter words from a), what is *P*(A *or* I, S)?

Vocabulary Link

Match the descriptions in Column A with the terms in Column B by connecting them with a line. Then, write the term on the blank lines.

A	B
1. all possible outcomes of a probability experiment _____ _____	**a)** equally likely
2. one possible result of a probability experiment _____	**b)** experimental
3. the likelihood or chance of an event occurring _____	**c)** favourable outcome
4. 50:50 chance _____ _____	**d)** independent
5. a successful result in a probability experiment _____ _____	**e)** outcome
6. 	**f)** probability
7. type of event in which the outcome of one event has no effect on the outcome of another event _____	**g)** random
8.	**h)** sample space
9. expected probability of an event occurring _____	**i)** tally chart
10. an event in which every outcome has an equal chance of occurring _____	**j)** theoretical
11. probability of an event occurring based on experimental results _____	**k)** tree diagram

6.

Type of Duck	Tally
Canvasback	ⅡⅡ ⅡⅡ
Redhead	ⅡⅡ Ⅱ
Mallard	ⅡⅡ ⅡⅡ ⅡⅡ ⅡⅡ ⅡⅡ ⅡⅡ Ⅰ
Pintail	ⅡⅡ ⅡⅡ ⅡⅡ ⅡⅡ ⅡⅡ Ⅲ

_____ _____

8.

Coin Flip	Spinner	Outcome
H	bear	H, bear
	elk	H, elk
	salmon	H, salmon
T	bear	T, bear
	elk	T, elk
	salmon	T, salmon

_____ _____