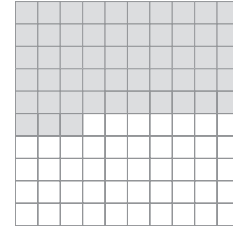## Get Ready

Name: _____ **Date:** _____

Percents
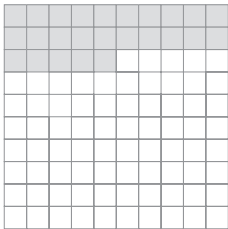
> *Percent* means out of 100.
> A percent can be represented by shading on a hundred grid.
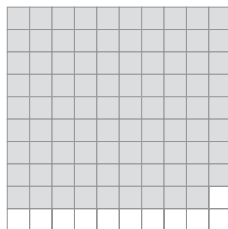> This grid represents 53%.
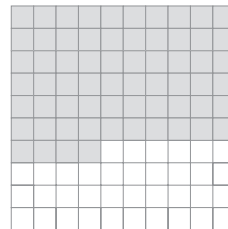
1. What percent is shown on each grid?
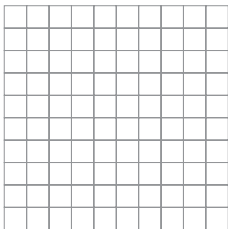
   a)
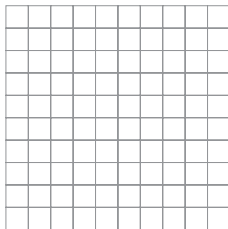
   b)

   c)

2. Shade hundred grids to represent each percent.
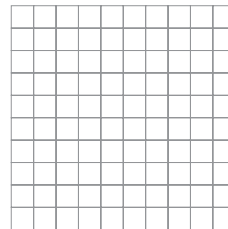
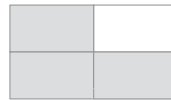   **a)** 3%   **b)** 46%   **c)** 97%

Fractions, Decimals, and Percents

> This diagram represents $\frac{3}{4}$.
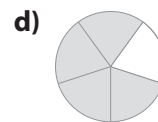> This fraction is 0.75 or 75% of the square.
>
> To change a decimal to a percent, multiply by 100 and add a percent symbol.

EQA

Name: _____   **Date:** _____

3. Show each diagram as a fraction, a decimal, and a percent.

a)

b)

c)

d)

Repeating Decimals

A *repeating decimal* contains one or more digits that repeat over and over without ending.

$\frac{2}{3} = 0.\overline{6}$ or $2 \div 3 = 0.6666666...$

Use a bar to show the repeating part.

To show as a percent, multiply the decimal by 100 and add a percent symbol.

$0.\overline{6} = 66.\overline{6}\%$

4. Show as repeating decimals.

a) 0.3333333

b) 0.4545454

c) 0.2727272

5. Show each fraction as a repeating decimal and as a percent.

a) $\frac{9}{11}$

b) $\frac{7}{9}$

c) $\frac{5}{6}$

Estimating Percents

To estimate the percent of a number, use percents you know.

52% of 250 is about 50% of 250.

50% of 250 is half of 250 or 125.

12% of 60 is about 10% of 60.

10% is about one tenth of 60 or 6.

6. Estimate each percent of a number.

a) 22% of 85

b) 48% of 102

c) 75% of 70

d) 82% of 91

PDF Proof   aptara

Name: _____   **Date:** _____

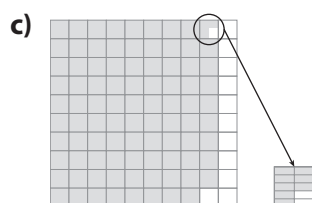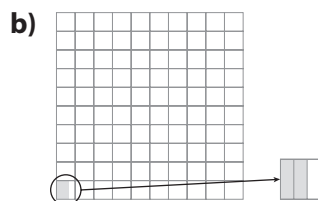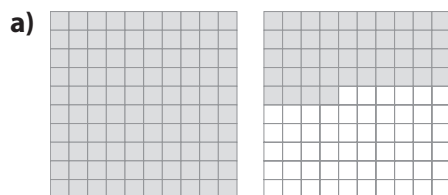# 4.1 Representing Percents

MathLinks 8, **pages 122–129**

Key Ideas Review

Match each sentence beginning in column A to an ending in column B.

A	B
1. To represent a percent greater than 100%, _____	**a)** shade squares from a hundred grid to show the whole number and part of one square to show the fraction.
2. To represent a fractional percent greater than 1%, _____	**b)** shade part of one square on a hundred grid.
3. To represent a whole percent, _____	**c)** shade more than one hundred grid.
4. To represent a fractional percent between 0% and 1%, _____	**d)** shade squares on a grid of 100 squares called a hundred grid.

Practise and Apply

5. One full grid represents 100%. What percent does each diagram represent?

a)

b)

c)

6. What percent is represented by each diagram if a completely shaded grid represents 100%?

a)

b)

c)
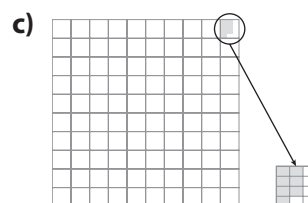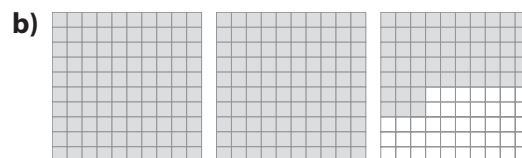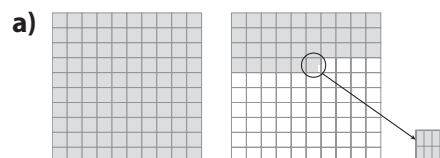
Name: _____   **Date:** _____

7. Represent each percent on the grids provided.

a) $\frac{3}{4}$%
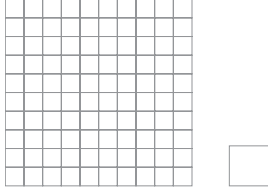
b) 174%
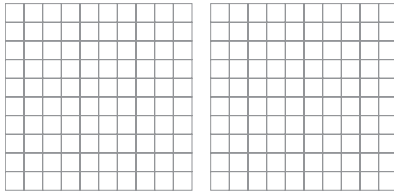
8. Represent the percent in each statement on a grid provided.

a) A tax is $6\frac{1}{2}$%
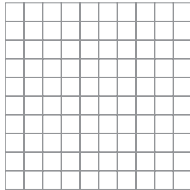
b) Mt. Everest is about 146% the height of Mt. Logan.
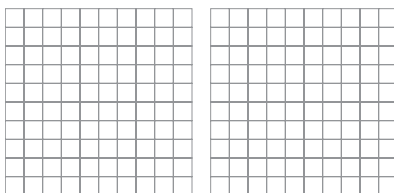
9. How many hundred grids are needed to show each of the following percents? Explain your thinking.

a) 230%

b) 680%

c) 395%

d) 1420%

10. About 1.7% of Earth's water is stored in groundwater, lakes, rivers, streams, and soil. Use the hundred grid below to show this percent.
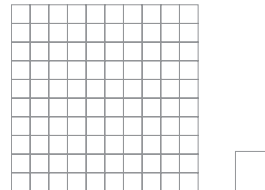
11. An orange contains about 80% of the recommended daily value of vitamin C. Use a hundred grid to show how many oranges you would need to eat to get 100% of the daily value of vitamin C.
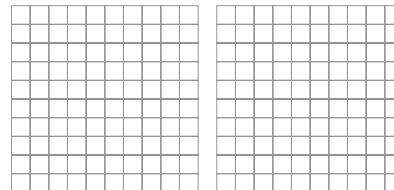
Name: _____   **Date:** _____

4.2 Fractions, Decimals, and Percents

MathLinks 8, **pages 130–137**

Key Ideas Review

Choose from the following terms to complete each statement.

| decimals | division | fractions | hundred grid | hundred grids | multiplication |

1. You can convert fractions to decimals using a _____

_____ or _____.

For example:

$\frac{3}{20}$ = or _____
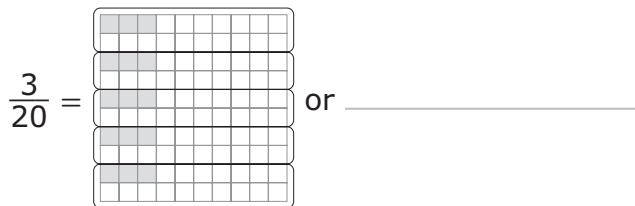
$\frac{3}{20}$ = 3 ÷ 20 = _____

2. You can convert decimals to percents using _____

_____ or _____.

For example:

2.26 = = _____
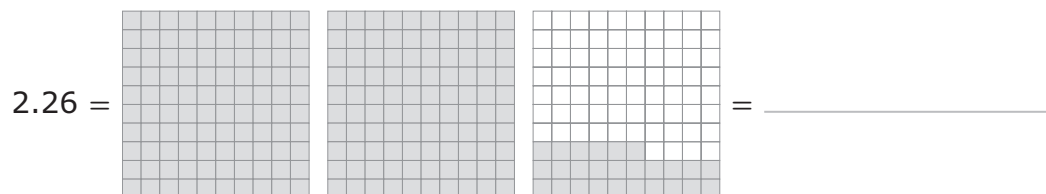
2.26 = 2.26 × 100% = _____

3. Percents can be written as _____ and as _____.

Practise and Apply

4. Rewrite each fraction as a decimal and a percent. Show your thinking.

a) $\frac{3}{4}$ = _____ or _____

b) $\frac{21}{300}$ = _____ or _____

c) $\frac{9}{5}$ = _____ or _____

d) $\frac{1}{8}$ = _____ or _____

e) $\frac{3}{80}$ = _____ or _____

Name: _____   **Date:** _____

5. Convert each decimal to a percent and a fraction in lowest terms. Show your thinking.

a) 4.25

b) 0.845

c) 0.0062

6. Convert each percent to a decimal, then a fraction. Show your thinking.

a) 735%

b) $16\frac{1}{2}\%$

c) 0.6%

7. Tristan charges a flat rate of $16 for each small lawn that he mows. He decided to increase his rate to $20. What is the new rate as a percent of the old rate? Show your thinking.

8. If one completely shaded grid represents one whole, express the shaded portion of each diagram as a fraction, a decimal, and a percent.

a)

b)

c)
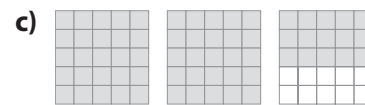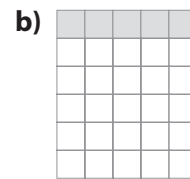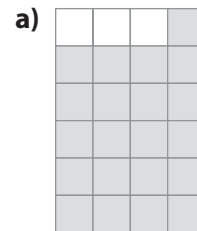
9. About 0.038% of Earth's atmosphere is carbon dioxide. Write this amount as a decimal and a fraction.

10. Kenji calculated that he needed to eat about 2000 calories per day based on his weight, age, and activity level. For lunch, he ate a hamburger that had 538 calories. What percent of Kenji's daily calorie needs does this hamburger represent? Show your thinking.

538 calories

Name: _____   **Date:** _____

4.3 **Percent of a Number**

MathLinks 8, **pages 138–143**

Key Ideas Review

1. Label each example with the mental math strategy it represents: halving, doubling, or dividing by ten. Then, complete the calculation.

a) 1% of $66

10% of $66 = $6.60

So, 1% of 66 = $ ☐ _____

b) 5% of 180

10% of 180 = 18

So, 5% of 180 = ☐ _____

c) 20% of $3.20

10% of $3.20 = $0.32

So, 20% of $3.20 = $ ☐ _____

2. Circle the terms that correctly complete this statement.
To calculate the percent of a number, write the percent as a (decimal/fraction), and then (divide/multiply) by the number.

Practise and Apply

3. Use mental math to determine each of the following. Show your thinking.

a) 200% of 4500

b) 0.1% of 600

c) $1\frac{1}{4}$% of 80

d) 30% of 70

e) $\frac{4}{5}$% of 15

f) 450% of 300

Name: _____   **Date:** _____

4. What is the percent of each number? Give your answer to the nearest hundredth.

   a) $\frac{1}{5}$% of 630

   b) $23\frac{7}{8}$% of 300

   c) 245% of $356.80

   d) $68\frac{3}{4}$% of 730

   e) 360% of $129.95

5. The commission for the sale of a house was $6\frac{3}{4}$%. If the house sold for $345 000, how much was the commission? Show your thinking.

6. Table salt is a chemical compound of sodium and chlorine. Recommended daily intake is about 1700 mg. If Canadians consume 182% of this amount on average, how much sodium is one person eating daily?

7. Estimate the following answers, then calculate. Show your thinking.

   a) Miguel bought a car for $4700. He made a down payment of $19\frac{1}{2}$%. How much was the down payment?

19.5% down
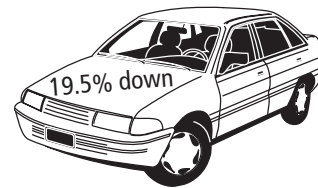
   b) About 5.6% of Canadians have Type 2 diabetes. If Canada's population is 32 million, about how many Canadians have this condition?

   c) The 4900-seat hockey arena was 63% full. How many people were at the game?

8. The Nile River is about 209% the length of the Yukon River. If the Yukon River is 3168 km, how long is the Nile River (to the nearest km)? Show your work.

Yukon River

Dawson City

Whitehorse

Name: _____ **Date:** _____

4.4 Combining Percents

MathLinks 8, **pages 144–149**

Key Ideas Review

Match the method of calculating percent in column A with an example in column B.

A	B
1. To determine amounts that result from consecutive percent increases or decreases, percents of percents can be used. ____	**a)** 111% of 200 = 1.11 × 200 = 222
2. To calculate the increase in a number, multiply the original number by a single percent greater than 100. ____	**b)** 11% of 200 = 0.11 × 200 = 22 200 + 22 = 222
3. Percents can be combined by adding. ____	**c)** 5% + 6% = 11%
4. To calculate the increase in a number, add the percent change to the original number. ____	**d)** 20% of 50 = 10 50 − 10 = 40 20% of 40 = 8 40 − 8 = 32

Practise and Apply

5. Estimate and then calculate each bill, including 13% in taxes.

a) shirt $39.20
jeans $79.80
Estimate:

Calculation:

b) 4 binders $2.25 each
geometry set $1.65
calculator $10.35
Estimate:

Calculation:

c) flashlight $9.75
3-piece pliers $11.95
super glue $1.63
detergent $7.67
Estimate:

Calculation:

d) 2 toothpaste $2.79 each
3 toothbrushes $7.99 each
dental floss $4.49
Estimate:

Calculation:

Name: _____   **Date:** _____

6. The Casa Della restaurant had 40 diners for lunch on Wednesday. Calculate the number of diners the next night if there was a 15% increase.

7. A clothing store had a 30% off sale one week. The next week, the sale offered another 20% off all jackets.

a) If the original price of a jacket was $120, what was the price in the second week? Show your thinking.

b) Would a 50% off sale result in a lower price? Explain.

8. The Electronics for Less store has a 25% off sale on all cameras.

a) What is the sale price of a $240 camera?

b) Find the total cost of the discounted camera including 5% GST and 6% PST. Show your thinking.

9. The White Chuck Glacier is in the Cascade Range of western North America. In 1958 it covered 3.1 km^2. By 2002 it had lost about 70% of its area. What was the area of the glacier in 2002? Show your thinking.

10. Patrick has saved $300 for a new stereo. He finds a $950 stereo on sale for 30% off. If GST is 5% and the PST is 6%, how much money will Patrick have to borrow in order to buy this stereo? Show your thinking.

$950

11. In Mr. Patterson's Math classes, 80% of his 110 students have their own calculators. How many of his students do not have their own calculators? Show your thinking.

12. Sofia started a new job that paid $8/h. In the first two years she was guaranteed a pay raise of 10% every six months. What will be her hourly wage after one year? Show your thinking.
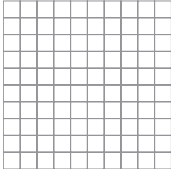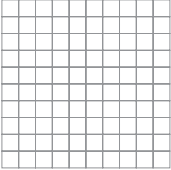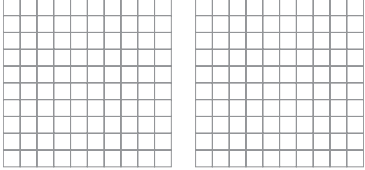
Name: _____   **Date:** _____

Link It Together

There are 240 students at the school. A concert is being planned. The members of the planning committee are considering different numbers of people that might attend.
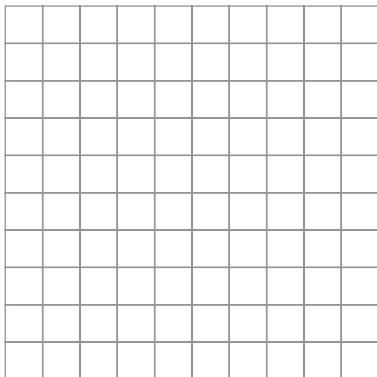
1. Complete the table to help them with their thinking.

Scenario	Show Percent Using Hundred Grids	Calculate Size of Possible Audience
a) 80% of the students attend. How large will the audience be?		
b) 71.25% of the students attend. How large will the audience be?		
c) 65% of the students attend. Each student brings a guest. How large will the audience be?		

2. The concert was attended by 75% of the students. $66\frac{2}{3}$% of these students brought two adults.

a) What percent of the school population was accompanied by two adults? Use a hundred grid to show your thinking.

b) How many people attended the concert?

c) Explain why your answer to a) was not $66\frac{2}{3}$% of the school population.

_____

_____

_____

Name: _____   **Date:** _____

Vocabulary Link

Draw a line from the example in column A to the correct term in column B. Then, find each term in the word search.

A	B
1. 250%	**a)** combined percent
2. 100%	**b)** double
3. 78%	**c)** fractional percent
4. $\frac{3}{200}$%	**d)** greater than one
5. 85% × 2 = 170%	**e)** halve
6. 85% ÷ 2 = 42.5%	**f)** one
7. 40% + 45% = 85%	**g)** percent

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