

## Section 6 – Fractions cont.

This book belongs to: KEY Block: \_\_\_\_\_

Section	Due Date	Questions I Find Difficult	Marked	Corrections Made and Understood

### Self-Assessment Rubric

Category	Sub-Category	Description	
Expert	6	Work meets the objectives; is clear, error free, and demonstrates a mastery of the Learning Targets	"You could teach this!"
	5	Work meets the objectives; is clear, with some minor errors, and demonstrates a clear understanding of the Learning Targets	"Almost Perfect, one little error."
Apprentice	4	Work almost meets the objectives; contains errors, and demonstrates sound reasoning and thought concerning the Learning Targets	"Good understanding with a few errors."
	3	Work is in progress; contains errors, and demonstrates a partial understanding of the Learning Targets	"You are on the right track, but key concepts are missing."
Novice	2	Work does not meet the objectives; frequent errors, and minimal understanding of the Learning Targets is demonstrated	"You have achieved the bare minimum to meet the learning outcome."
	1	Work does not meet the objectives; there is no or minimal effort, and no understanding of the Learning Targets	"Learning Outcomes not met at this time."

### Learning Targets and Self-Evaluation

Learning Target	Description	Mark
6 – 1	<ul style="list-style-type: none"> <li>• Understanding the conversion of a percentage to a decimal, and vice-versa</li> <li>• Converting from a fraction to a decimal</li> </ul>	
6 – 2	<ul style="list-style-type: none"> <li>• Converting from fraction to decimal to percent</li> <li>• Converting from percent to simplified decimal</li> <li>• The percentage of tax and price with money</li> </ul>	

### Competency Self-Evaluation

A valuable aspect to the learning process involves self-reflection and efficacy. Research has shown that authentic self-reflection helps improve performance and effort, and can have a direct impact on the growth mindset of the individual. In order to grow and be a life-long learner we need to develop the capacity to monitor, evaluate, and know what and where we need to focus on improvement. Read the following list of Core Competency Outcomes and reflect on your behaviour, attitude, effort, and actions throughout this unit.

Rank yourself with a check mark: E (Excellent), G (Good), S (Satisfactory), N (Needs Improvement)

		E	G	S	N
<b>Personal Responsibility</b>	<ul style="list-style-type: none"> <li>I <b>listen</b> during instruction period and come to class ready to ask questions</li> </ul>				
	<ul style="list-style-type: none"> <li>I am <b>fully prepared</b> for the class, with all the required supplies</li> </ul>				
	<ul style="list-style-type: none"> <li>I am <b>fully prepared</b> for Quizzes</li> </ul>				
	<ul style="list-style-type: none"> <li>I <b>follow</b> instructions and <b>assist</b> peers</li> <li>I am <b>on task</b> during work blocks</li> <li>I <b>complete</b> assignments <b>on time</b></li> </ul>				
<b>Self-Regulation</b>	<ul style="list-style-type: none"> <li>I keep track of my <b>Learning Targets</b></li> </ul>				
	<ul style="list-style-type: none"> <li>I take <b>ownership</b> over my goals, learning, and behaviour</li> </ul>				
	<ul style="list-style-type: none"> <li>I can <b>solve problems</b> myself and know when to ask for help</li> <li>I can <b>persevere</b> in challenging tasks</li> <li>I <b>take responsibility</b> to be actively engaged in the lesson and discussions</li> </ul>				
	<ul style="list-style-type: none"> <li>I only use my phone for school tasks</li> </ul>				
<b>Classroom Responsibility and Communication</b>	<ul style="list-style-type: none"> <li>I am <b>focused</b> on the discussion and lessons</li> </ul>				
	<ul style="list-style-type: none"> <li>I <b>ask questions</b> during the lesson and class</li> </ul>				
	<ul style="list-style-type: none"> <li>I give <b>my best effort</b> and <b>encourage</b> others to work well</li> </ul>				
	<ul style="list-style-type: none"> <li>I am polite and communicate questions and concerns with my peers and teacher</li> </ul>				
<b>Collaborative Actions</b>	<ul style="list-style-type: none"> <li>I can <b>work with others</b> to achieve a common goal</li> </ul>				
	<ul style="list-style-type: none"> <li>I make <b>contributions</b> to my group</li> </ul>				
	<ul style="list-style-type: none"> <li>I <b>am kind</b> to others, can work collaboratively and <b>build relationships</b> with my peers</li> </ul>				
	<ul style="list-style-type: none"> <li>I can <b>identify</b> when others need support and provide it</li> </ul>				
<b>Communication Skills</b>	<ul style="list-style-type: none"> <li>I present informative <b>clearly</b>, in an organized way</li> </ul>				
	<ul style="list-style-type: none"> <li>I <b>ask and respond</b> to simple direct questions</li> </ul>				
	<ul style="list-style-type: none"> <li>I am an <b>active listener</b>, I support and encourage the speaker</li> </ul>				
	<ul style="list-style-type: none"> <li>I <b>recognize</b> that there are different points of view and can disagree respectfully</li> </ul>				
<b>Overall</b>					
<b>Goal for next Unit</b> – refer to the above criteria. Please select (underline/highlight) <b>two</b> areas you want to focus on					

**Pre-Unit Questions**

1. Did you struggle with anything in section 2.0 on Fractions? If so, what did you struggle with?

---

---

2. What skills do I have going into this unit?

---

---

3. What is your learning goal this unit?

---

---

4. How do you plan on accomplishing your learning goals this unit?

---

---

Try every question in this booklet. Show your steps (thinking process) and keep trying until you get the right answer. If you are struggling and would like additional support, ask!

## Section 6.1 – Percentages

### What is a percentage?

- It is a **ratio**... AKA a fraction!
- The **general form** of a percentage is:

$$\frac{\textit{anything}}{100}$$

### Examples:

$$\frac{78}{100} \text{ is } 78\%$$

$$\frac{5}{100} \text{ is } 5\%$$

$$\frac{23}{100} \text{ is } 23\%$$

- So if we can find a fraction with a **denominator** (bottom number) of **100**, we can easily put it into **percentage form**
- When we are working with **percentages**, we can also represent them as **decimals**

### Converting Percentages to Decimals and Vice Versa

- Think of percentages in terms of money...

$$100\% = \$1.00$$

$$76\% = \$0.76$$

$$50\% = \$0.50$$

$$23\% = \$0.23$$

$$4\% = \$0.04$$

- So if I have a decimal, I can easily convert it to a percentage.

$$0.45 = 45\%$$

$$0.61 = 61\%$$

$$1.20 = 120\%$$

$$0.003 = .3\%$$

**Converting from a Fraction to a Decimal**

- Fractions: the top number (numerator) divided by the bottom number (denominator).
- We can figure out the decimal expansion of any fraction



$$\frac{3}{4}$$

← Numerator

← Denominator

So 3 divided by 4 is...

So what is  $\frac{3}{4}$  as a percentage?

**Converting from Fractions to Decimals to Percentages and Percent to Decimals to Fractions**

- We **have to convert to decimal form** when we work with percentages!
  - If we have a denominator of 100, it is easy to convert

**Examples:**

$$\frac{78}{100} = 0.78 = 78\%$$

$$\frac{5}{100} = 0.05 = 5\%$$

$$\frac{23}{100} = 0.23 = 23\%$$

- If we have a fraction with a **denominator that can multiply to 100** (and thus makes an equivalent fraction with a denominator of 100) it is still pretty easy to get a percent

**Examples:**

$$\frac{12}{50} = \frac{24}{100} = 0.24 = 24\%$$

$$\frac{3}{20} = \frac{15}{100} = 0.15 = 15\%$$

$$\frac{19}{25} = \frac{76}{100} = 0.76 = 76\%$$

- If we have fractions with a **denominator that can't multiply to 100**, we have to divide out the fraction to get the decimal.

**Examples:**

$$\frac{3}{12} = \frac{1}{4} = 0.25 = 25\%$$

$$\frac{5}{8} =$$

$$\begin{array}{r} 0.625 \\ 8 \overline{) 5000} \\ \underline{-48} \phantom{0} \\ 20 \phantom{0} \\ \underline{-16} \phantom{0} \\ 40 \end{array}$$

$$0.625 \rightarrow 62.5\%$$

$$\frac{12}{15} = 0.8 = 80\%$$

$$\begin{array}{r} 0.8 \\ 15 \overline{) 120} \\ \underline{-120} \\ 0 \end{array}$$

$$\frac{2}{9} = 0.22\bar{2} = 22.\bar{2}\%$$

$$\begin{array}{r} .222 \\ 9 \overline{) 20} \\ \underline{-18} \phantom{0} \\ 20 \phantom{0} \\ \underline{-18} \phantom{0} \\ 20 \end{array}$$

- We can also convert percentages to fractions. Take the number in a **fraction over 100** and **simplify**

Examples:

$$36\% = \frac{36}{100} = \frac{8}{25}$$

$$78\% = \frac{78}{100} = \frac{39}{50}$$

$$64\% = \frac{64}{100} = \frac{16}{25}$$

$$25\% = \frac{25 \div 25}{100 \div 25} = \frac{1}{4}$$

$$54\% = \frac{54 \div 2}{100 \div 2} = \frac{27}{50}$$

$$40\% = \frac{40}{100} = \frac{4}{10} = \frac{2}{5}$$

$$56\% = \frac{56 \div 4}{100 \div 4} = \frac{14}{25}$$

## Converting Fractions to Hundredths (A) Answers

Instructions: Express each fraction in fraction then decimal hundredths.

$\frac{19}{25} = \frac{76}{100} = 0.76$	$\frac{11}{50} = \frac{22}{100} = 0.22$	$\frac{7}{20} = \frac{35}{100} = 0.35$
---	---	--

$\frac{1}{10} = \frac{10}{100} = 0.10$	$\frac{10}{25} = \frac{40}{100} = 0.40$	$\frac{21}{25} = \frac{84}{100} = 0.84$
--	---	---

$\frac{18}{20} = \frac{90}{100} = 0.90$	$\frac{11}{50} = \frac{22}{100} = 0.22$	$\frac{2}{10} = \frac{20}{100} = 0.20$
---	---	--

$\frac{13}{25} = \frac{52}{100} = 0.52$	$\frac{11}{50} = \frac{22}{100} = 0.22$	$\frac{7}{20} = \frac{35}{100} = 0.35$
---	---	--

$\frac{3}{25} = \frac{12}{100} = 0.12$	$\frac{11}{50} = \frac{22}{100} = 0.22$	$\frac{6}{10} = \frac{60}{100} = 0.60$
--	---	--

$\frac{2}{5} = \frac{40}{100} = 0.40$	$\frac{7}{25} = \frac{28}{100} = 0.28$	$\frac{3}{20} = \frac{15}{100} = 0.15$
---------------------------------------	--	--

$\frac{11}{50} = \frac{22}{100} = 0.22$	$\frac{2}{4} = \frac{50}{100} = 0.50$	$\frac{11}{50} = \frac{22}{100} = 0.22$
---	---------------------------------------	---

$\frac{12}{25} = \frac{48}{100} = 0.48$	$\frac{21}{25} = \frac{84}{100} = 0.84$	$\frac{15}{25} = \frac{60}{100} = 0.60$
---	---	---



## Converting Fractions (A) Answers

Fill in the missing values. Use part-to-whole ratios.

	Fraction	Decimal	Percent	Ratio
1.	$\frac{5}{9}$	$0.\overline{5}$	$55.\overline{5}\%$	$5 : 9$
2.	$\frac{4}{5}$	$0.8$	$80\%$	$4 : 5$
3.	$\frac{5}{8}$	$0.625$	$62.5\%$	$5 : 8$
4.	$\frac{1}{6}$	$0.1\overline{6}$	$16.\overline{6}\%$	$1 : 6$
5.	$\frac{4}{10}$	$0.40$	$40\%$	$4 : 10 = 2 : 5$
6.	$\frac{1}{12}$	$0.08\overline{3}$	$8.\overline{3}\%$	$1 : 12$
7.	$\frac{3}{5}$	$0.6$	$60\%$	$3 : 5$
8.	$\frac{1}{3}$	$0.\overline{3}$	$33.\overline{3}\%$	$1 : 3$
9.	$\frac{2}{5}$	$0.4$	$40\%$	$2 : 5$
10.	$\frac{1}{9}$	$0.\overline{1}$	$11.\overline{1}\%$	$1 : 9$

## Converting Percents (A) Answers

Fill in the missing values. Use part-to-whole ratios.

	Fraction	Decimal	Percent	Ratio
1.	$\frac{1}{4}$	0.25	25%	1 : 4
2.	$\frac{5}{9}$	$0.\bar{5}$	55. $\bar{5}$ %	5 : 9
3.	$\frac{8}{9}$	$0.\bar{8}$	88. $\bar{8}$ %	8 : 9
4.	$\frac{1}{2}$	0.5	50%	1 : 2
5.	$\frac{1}{12}$	$0.08\bar{3}$	8. $\bar{3}$ %	1 : 12
6.	$\frac{5}{6}$	$0.8\bar{3}$	83. $\bar{3}$ %	5 : 6
7.	$\frac{7}{8}$	0.875	87.5%	7 : 8
8.	$\frac{9}{10}$	0.9	90%	9 : 10
9.	$\frac{1}{5}$	0.2	20%	1 : 5
10.	$\frac{1}{10}$	0.1	10%	1 : 10

Figuring out Percentages of Numbers

- This is used all the time when we think about **discounts, deals, or calculating the tip**
- All we need to do is some good old fashion multiplication!
- We **multiply the percentage in the form of a decimal** by the **amount**.

Examples:

1. What is 37% of 200?

$$37\% = 0.37$$

$$\begin{array}{r} 200 \\ \times 0.37 \\ \hline 1400 \\ 6000 \\ \hline 74.00 \end{array}$$

Since there are 2 numbers after the decimal, we move 2 from the right in the answer

2. What is 10% of 86?

$$\begin{array}{r} 86 \\ \times 0.10 \\ \hline 8.60 \end{array}$$

10% of 86 is 8.6

37% of 200 is 74

3. What is 80% of 1200?

$$\begin{array}{r} 1200 \\ \times 0.80 \\ \hline 960.00 \end{array}$$

80% of 1200 is 960.00 or 960

4. What is 65% of 880?

$$\begin{array}{r} 880 \\ \times 0.65 \\ \hline 572.00 \end{array}$$

65% of 880 is 572.00 or 572

- This works the same way with money

Examples:

1. What is 30% of \$45?

$$30\% = 0.30$$

$$\begin{array}{r} 45 \\ \times 0.30 \\ \hline 13.50 \end{array}$$

$$\boxed{30\% \text{ of } \$45 \text{ is } \$13.50}$$

2. What is 20% of \$120?

$$\begin{array}{r} 120 \\ \times 0.20 \\ \hline 24.00 \end{array}$$

$$\boxed{20\% \text{ of } \$120 \text{ is } \$24}$$

3. So if the deal is for 25% off of \$150, how much would you have to pay?

$$\begin{array}{r} 150 \\ \times 0.25 \\ \hline 750 \\ 3000 \\ \hline 37.50 \end{array}$$

$$\begin{array}{r} 150.00 \\ - 37.50 \\ \hline 112.50 \end{array}$$

$$\boxed{\text{The total amount owed is } \$112.50}$$

4. If you buy a new TV for \$899, and you get a 15% discount, how much is it?

$$\begin{array}{r} 899 \\ \times 0.15 \\ \hline 4495 \\ 8990 \\ \hline 134.85 \end{array}$$

$$\text{Discount} = \$134.85$$

$$\$899.00 - \$134.85 = \boxed{\$764.15}$$

## Percent Calculations (A) Answers

Calculate the percent or value requested.

1. What is 37% of 600?

222

2. What is 51% of 200?

102

3. What is 86% of 950?

817

4. What is 71% of 1,000?

710

5. What is 26% of 150?

39

6. What is 13% of 100?

13

7. What is 58% of 300?

174

8. What is 9% of 200?

18

9. What is 58% of 750?

435

10. What is 17% of 600?

102

## Percent Calculations (B) Answers

Calculate the percent or value requested.

1. What is 70% of 170?

119

2. What is 26% of 900?

234

3. What is 90% of 110?

99

4. What is 84% of 600?

504

5. What is 16% of 75?

12

6. What is 72% of 275?

198

7. What is 68% of 475?

323

8. What is 26% of 1,000?

260

9. What is 33% of 700?

231

10. What is 8% of 50?

4

## Percent Calculations (A) Answers

Calculate the percent or value requested.

1. What is 46% of \$250?

\$115

2. What is 44% of \$500?

\$220

3. What is 62% of \$250?

\$155

4. What is 43% of \$500?

\$215

5. What is 91% of \$1,000?

\$910

6. What is 47% of \$500?

\$235

7. What is 78% of \$350?

\$273

8. What is 23% of \$800?

\$184

9. What is 52% of \$425?

\$221

10. What is 9% of \$100?

\$9

- We can use this to **calculate tax** and the **total** we have to pay too!
  - We first have to convert the tax from a **percentage to a decimal**
  - Next we **multiply by the price**
  - Then we **add that amount** to the **original price** to find the total we have to pay

**Examples:**

1. That is the final purchase price of a \$59 item with 5% GST?

$$5\% = 0.05$$

$$\begin{array}{r} 59 \\ \times 0.05 \\ \hline 2.95 \end{array}$$

$$\text{GST is } \$2.95$$

$$\text{Total is } \$59 + \$2.95 = \boxed{\$61.95}$$

2. What is the final purchase price of a \$145 pair of shoes with 12% tax?

$$12\% = 0.12$$

$$\begin{array}{r} 145 \\ \times 0.12 \\ \hline 290 \\ 1450 \\ \hline 17.40 \end{array}$$

$$\text{Tax is } \$17.40$$

$$\text{Total is } \$145 + \$17.40$$

$$= \boxed{\$162.40}$$

3. What is the final purchase price of a \$399.95 PS4 with 5% tax?

$$5\% = 0.05$$

$$\begin{array}{r} 399.95 \\ \times 0.05 \\ \hline 19.9975 \end{array}$$

$$\text{Tax is } \$20.00$$

$$\text{Total is } \$399.95 + \$20.00$$

$$= \boxed{\$419.95}$$



# Calculating Final Prices

Using Tax Rates

## ANSWER KEY



Find the final price of each product after a tax is applied.

(1) Phone charger: \$15.00

Tax Rate: 7%

$$\text{Tax: } 15.00 \times 0.07 = \$1.05$$

$$\text{Total: } 15.00 + 1.05 = \$16.05$$

(2) Baseball cap: \$16.00

Tax Rate: 6%

$$\text{Tax: } 16.00 \times 0.06 = \$0.96$$

$$\text{Total: } 16.00 + 0.96 = \$16.96$$

(3) Theater ticket: \$7.00

Tax Rate: 9%

$$\text{Tax: } 7.00 \times 0.09 = \$0.63$$

$$\text{Total: } 7.00 + 0.63 = \$7.63$$

(4) Fruit smoothie: \$4.00

Tax Rate: 9%

$$\text{Tax: } 4.00 \times 0.09 = \$0.36$$

$$\text{Total: } 4.00 + 0.36 = \$4.36$$

(5) Digital wristwatch: \$22.00

Tax Rate: 6%

$$\text{Tax: } 22.00 \times 0.06 = \$1.32$$

$$\text{Total: } 22.00 + 1.32 = \$23.32$$

(6) Surf board: \$165.00

Tax Rate: 6%

$$\text{Tax: } 165.00 \times 0.06 = \$9.90$$

$$\text{Total: } 165.00 + 9.90 = \$174.90$$

(7) Wooden toy: \$10.00

Tax Rate: 4%

$$\text{Tax: } 10.00 \times 0.04 = \$0.40$$

$$\text{Total: } 10.00 + 0.40 = \$10.40$$

(8) Board game: \$16.00

Tax Rate: 4%

$$\text{Tax: } 16.00 \times 0.04 = \$0.64$$

$$\text{Total: } 16.00 + 0.64 = \$16.64$$

(9) Colored pencils: \$6.00

Tax Rate: 8%

$$\text{Tax: } 6.00 \times 0.08 = \$0.48$$

$$\text{Total: } 6.00 + 0.48 = \$6.48$$

(10) Soccer ball: \$13.00

Tax Rate: 4%

$$\text{Tax: } 13.00 \times 0.04 = \$0.52$$

$$\text{Total: } 13.00 + 0.52 = \$13.52$$

# Calculating Final Prices

## Using Tax Rates

# ANSWER KEY



Find the final price of each product after a tax is applied.

(1) Soccer ball: \$11.89

Tax Rate: 3.5%

$$\text{Tax: } 11.89 \times 0.035 = \$0.42$$

$$\text{Total: } 11.89 + 0.42 = \$12.31$$

(2) Fruit smoothie: \$3.79

Tax Rate: 4%

$$\text{Tax: } 3.79 \times 0.04 = \$0.15$$

$$\text{Total: } 3.79 + 0.15 = \$3.94$$

(3) Leather jacket: \$220.69

Tax Rate: 4.75%

$$\text{Tax: } 220.69 \times 0.0475 = \$10.48$$

$$\text{Total: } 220.69 + 10.48 = \$231.17$$

(4) Surf board: \$261.45

Tax Rate: 7%

$$\text{Tax: } 261.45 \times 0.07 = \$18.30$$

$$\text{Total: } 261.45 + 18.30 = \$279.75$$

(5) Wooden toy: \$10.69

Tax Rate: 8%

$$\text{Tax: } 10.69 \times 0.08 = \$0.86$$

$$\text{Total: } 10.69 + 0.86 = \$11.55$$

(6) Diamond ring: \$600.99

Tax Rate: 7.25%

$$\text{Tax: } 600.99 \times 0.0725 = \$43.57$$

$$\text{Total: } 600.99 + 43.57 = \$644.56$$

(7) Digital wristwatch: \$16.59

Tax Rate: 5%

$$\text{Tax: } 16.59 \times 0.05 = \$0.83$$

$$\text{Total: } 16.59 + 0.83 = \$17.42$$

(8) Silk tie: \$30.65

Tax Rate: 7%

$$\text{Tax: } 30.65 \times 0.07 = \$2.15$$

$$\text{Total: } 30.65 + 2.15 = \$32.80$$

(9) Board game: \$20.29

Tax Rate: 8.25%

$$\text{Tax: } 20.29 \times 0.0825 = \$1.67$$

$$\text{Total: } 20.29 + 1.67 = \$21.96$$

(10) Phone charger: \$15.29

Tax Rate: 6.5%

$$\text{Tax: } 15.29 \times 0.065 = \$0.99$$

$$\text{Total: } 15.29 + 0.99 = \$16.28$$

