

Practice Test

- 1.** Evaluate. Use coloured tiles.

Record your work.

- a) $(+5) + (-8)$ b) $(-3) - (+7)$ c) $(-9) + (-1)$
d) $(-4) + (+10)$ e) $(-6) - (-2)$ f) $(+12) - (-11)$

- 2.** Evaluate. Use a number line.

Record your work.

- a) $(+9) + (-1)$ b) $(-4) - (+11)$ c) $(-8) + (-3)$
d) $(+13) - (+6)$ e) $(-7) + (+9)$ f) $(-1) - (-5)$

- 3.** Without calculating the sum, how can you tell if the sum of two integers will be:

- a) zero? b) negative? c) positive?

Include examples in your explanations.

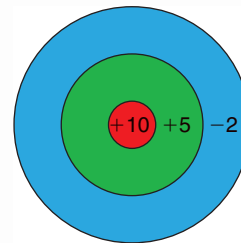
- 4.** Here is a different type of dartboard.

A player throws 2 darts at the board.

His score is the sum of the integers in the areas his darts land.

Assume both darts hit the board.

- a) How many different scores are possible?
b) Find each score.



- 5.** The lowest temperature possible is approximately -273°C .

The temperature at which water boils is 100°C .

What is the difference in these temperatures?

- 6.** Place 3 integers in a row as shown.

$(+6)$ $(+4)$ (-3)

How many different answers can you get by putting addition and/or subtraction signs between the integers?

How do you know you have found all possible answers?

For example: $(+6) + (+4) - (-3)$

What if there were 4 integers in a row?

Mid-Unit Review

LESSON

Use a calculator when you need to.

3.1 1. a) Write each fraction as a decimal.

i) $\frac{1}{33}$ ii) $\frac{2}{33}$ iii) $\frac{3}{33}$

b) Describe the pattern in your answers to part a.

c) Use your pattern to predict the fraction form of each decimal.

i) $0.\overline{15}$ ii) $0.\overline{36}$

2. Write each fraction as a decimal. Identify the decimals as repeating or terminating.

a) $\frac{1}{8}$ b) $\frac{3}{5}$
c) $\frac{2}{3}$ d) $\frac{7}{13}$

3. Write each decimal as a fraction.

a) 0.2 b) $0.\overline{8}$
c) 0.005 d) $0.\overline{23}$

3.2 4. Order each set of numbers from least to greatest. Use a different method for each part.

a) $2\frac{1}{4}, \frac{11}{6}, \frac{8}{3}, 2$ b) $3.5, \frac{23}{8}, 1\frac{3}{4}$
c) $1.75, \frac{13}{10}, \frac{9}{5}, 1\frac{3}{5}, 1$

5. Find a number between each pair of numbers. Which strategy did you use each time?

a) $\frac{4}{3}, \frac{5}{3}$ b) $2\frac{3}{8}, \frac{5}{2}$ c) $1.4, \frac{8}{5}$

3.3 6. Use front-end estimation to place the decimal point in each answer.

a) $32.47 - 6.75 = 2572$
b) $118.234 + 19.287 = 137521$
c) $17.9 - 0.8 = 171$

7. Winsome is being trained as a guide dog for a blind person.

At birth, she had a mass of 0.475 kg.

At 6 weeks, her mass was 4.06 kg.

From 6 weeks to 12 weeks, she gained 5.19 kg.

a) By how much did Winsome's mass change from birth to 6 weeks?

b) What was her mass at 12 weeks?

3.4 8. Estimate to place the decimal point in each product.

Show your estimation strategy.

a) $9.3 \times 0.8 = 744$

b) $3.62 \times 1.3 = 4706$

c) $11.25 \times 5.24 = 5895$

9. A rectangular park has dimensions 2.84 km by 3.5 km.

What is the area of the park?

3.5 10. When you divide 15.4 by 2, the quotient is 7.7.

When you divide 1.54 by 0.2, the quotient is 7.7.

Explain why the quotients are the same.

3.6 11. Evaluate.

a) $5.9 + 3.7 \times 2.8$

b) $12.625 \times (1.873 + 2.127)$

c) $2.1 \div 0.75 + 6.38 \times 2.45$

Practice Test

1. Add or subtract.

Draw a picture to show each sum or difference.

Write each sum or difference in simplest form.

a) $\frac{7}{5} + \frac{3}{5}$

b) $\frac{13}{10} - \frac{2}{3}$

c) $\frac{11}{12} - \frac{8}{12}$

d) $\frac{4}{9} + \frac{7}{6}$

2. Find two fractions that have a sum of $\frac{3}{5}$.

a) The fractions have like denominators.

b) The fractions have unlike denominators.

3. Find two fractions that have a difference of $\frac{1}{4}$.

a) The fractions have like denominators.

b) The fractions have unlike denominators.

4. Add or subtract.

a) $6\frac{3}{8} + 2\frac{1}{5}$

b) $3\frac{1}{10} - 1\frac{4}{5}$

5. Lana does yard work.

The table shows the approximate time for each job.

For one Saturday, Lana has these jobs:

- mow 3 small lawns
- mow 1 large lawn
- mow lawn/tidy yard in 2 places
- plant annuals in 1 place

Lana needs travel time between jobs,
and a break for lunch.

Do you think she will be able to do all the jobs? Justify your answer.

Job	Time
Mow small lawn	$\frac{1}{2}$ h
Mow large lawn	$\frac{3}{4}$ h
Mow lawn/tidy yard	$1\frac{1}{2}$ h
Plant annuals	$2\frac{1}{2}$ h

6. Write each fraction as the sum of two different unit fractions.

a) $\frac{3}{4}$

b) $\frac{5}{8}$

7. A fraction is written on each side of two counters.

All the fractions are different.

The counters are flipped and the fractions are added.

Their possible sums are: $1, 1\frac{1}{4}, \frac{7}{12}, \frac{5}{6}$

Which fractions are written on the counters?

Explain how you found the fractions.

- b) $(+4) + (0) = +4$;
 $(+2) + (-2) = +4$;
 $(-2) + (+6) = +4$;
 $(-4) + (+8) = +4$
6. $(-10) + (+17) = +7$;
 The new temperature is $+7^{\circ}\text{C}$.
- 7.a) i) $(-4) + (+5) = +1$
 ii) $(+2) + (-4) = -2$
- b) Answers may vary. For example:
 i) Sasha takes 4 steps backward and 5 steps forward.
 ii) The temperature is $+2^{\circ}\text{C}$ and then drops 4°C .
- 8.a) +2 b) -1 c) -5 d) +2
- 9.a) +2 b) +2 c) -10 d) -2
10. The difference of two positive integers is positive if the first integer is greater than the second integer. The difference of two positive integers is negative if the first integer is less than the second integer.
- 11.a) $+9^{\circ}\text{C}$ b) 0°C c) -6°C d) -7°C
- 12.a) +3 b) +6 c) +4 d) -5
 e) -4 f) -5 g) -2 h) +5
- 13.a) +5 b) -10 c) +1 d) 0 e) +6 f) -1
- 14.a) $+12^{\circ}\text{C}$ or -12°C
 b) -150 m or +150 m
- 15.a) -9 m or +9 m
 b) +14 m or -14 m
- 16.a) +12 kg or -12 kg
 b) -1 kg or +1 kg
- 17.a) +1 b) -2 c) +3 h or -3 h
18. Answers may vary. For example:
 a) $(+10) - (+4) = +6$
 $(+8) - (+2) = +6$
 $(+6) - (0) = +6$
 $(+4) - (-2) = +6$
 $(+2) - (-4) = +6$
 b) $(-5) - (-2) = -3$
 $(-1) - (+2) = -3$
 $(+3) - (+6) = -3$
 $(0) - (+3) = -3$
 $(-3) - (0) = -3$

Unit 2 Practice Test, page 81

- 1.a) -3 b) -10 c) -10
 d) +6 e) -4 f) +23
- 2.a) +8 b) -15 c) -11
 d) +7 e) +2 f) +4
- 3.a) The sum of two integers is zero when the integers are opposites.
 b) The sum of two integers is negative when both integers are negative; or when one

integer is positive and the other is negative, and the negative integer has a longer arrow on the number line.

- c) The sum of two integers is positive when both integers are positive; or when one integer is positive and the other is negative, and the positive integer has a longer arrow on the number line.
- 4.a) 6 different scores
 b) $(+10) + (+10) = +20$
 $(+10) + (+5) = +15$
 $(+10) + (-2) = +8$
 $(+5) + (+5) = +10$
 $(+5) + (-2) = +3$
 $(-2) + (-2) = -4$
5. $+373^{\circ}\text{C}$ or -373°C
6. There are 4 possible answers: +7, +13, -1, and +5.
 For 4 integers in a row, the addition and/or subtraction signs can be arranged as shown:
 + + +; + + -; + - +; + - -; - + +; - + -; - - +; - - -

Unit 2 Unit Problem: What Time Is It?, page 82

- 1.a) 0:00 a.m.
 b) 5:00 a.m.
 c) 9:00 a.m.
 d) 6:00 a.m.
2. 10:00 a.m. the next day
3. Atsuko needs to fly out at 3:00 p.m. Tokyo time.
 Paula needs to fly out at 7:00 a.m. Sydney time.

Unit 3 Fractions, Decimals, and Percents, page 84

3.1 Fractions to Decimals, page 88

- 1.a) i) $0.\overline{6}$
 ii) 0.75
 iii) 0.8
 iv) $0.\overline{83}$
 v) $0.\overline{857142}$
- b) i) repeating
 ii) terminating
 iii) terminating
 iv) repeating
 v) repeating
- 2.a) $\frac{9}{10}$

- b) The number of decimal places in the product is the sum of the number of decimal places in the question.
- c) 9.1; Yes, the rule applies, but the product must be written as 9.10. The calculator does not show the product this way.

3.5 Dividing Decimals, page 106

- 1.a) 8 b) 4 c) 4.5 d) 5.5
- 2.a) 12.45; 1.245; 0.1245; 0.012 45; Divide by multiples of 10. The digits in the quotient move one place to the right each time. Or, the decimal point moves one place to the left.
- b) 1245; 12 450; 124 500; 1 245 000; Divide by multiples of 0.1. The digits in the quotient move one place to the left each time. Or, the decimal point moves one place to the right.
3. All division statements are equivalent.
- 4.a) 11.9 b) 976.5 c) 39.15
- 5.a) 2.5 b) 3.2 c) 1.6 d) 2.4
- 6.a) 3.5 b) 1.5 c) 7.1 d) 24.1
7. 87
8. 27.9 m
- 9.a) About \$3
b) \$3.35
c) About 3 kg
- 10.a) About 12 pieces; Assumptions may vary.
b) No, he needs 14 pieces and he has material for 12.
c) If Alex cannot use the 0.28-m piece left after he cut twelve 0.8-m pieces, he needs 1.6 m of fabric. If he can use it, he only needs 1.32 m of fabric.
d) Yes; Alex would only need $0.7 \text{ m} \times 14 = 9.8 \text{ m}$ of fabric.
11. Answers may vary.
For example: 0.312 and 2.6
12. \$9.25; The result should be written to the nearest hundredth.
13. 237 is greater than 10 times 7 and less than 100 times 7, so the quotient should be between 10 and 100: $237 \div 7 = 33.857$
a) 338.57 b) 33.857 c) 3.3857 d) 33.857

3.6 Order of Operations with Decimals, page 109

- 1.a) 6.5 b) 6.2 c) 14 d) 1498
- 2.a) 58 b) 211 c) 12
- 3.a) 4.4
b) 2.2
- 4.a) 345.68 b) 18.038
c) 163 d) 116.54
- 5.a) Aida

- b) Ioana: $12 \times (4.8 \div 0.3 - 3.64 \times 3.5) = 39.12$
Norman: $(12 \times 4.8 \div 0.3 - 3.64) \times 3.5 = 659.26$

6. 41.21

7. Answers may vary. For example:

$$0.1 + 0.2 + 0.3 + 0.4 = 1,$$

$$(0.6 \times 0.5 + 0.7) \times 0.2 \div 0.1 = 2,$$

$$(0.8 + 0.7) \times 0.6 \div 0.3 = 3,$$

$$0.6 \div 0.2 + 0.1 + 0.9 = 4,$$

$$0.9 \div 0.3 + 0.4 \div 0.2 = 5$$

Unit 3 Mid-Unit Review, page 110

- 1.a) i) $0.\overline{03}$
ii) $0.0\overline{6}$
iii) $0.0\overline{9}$
- b) Start at $0.0\overline{3}$. Add $0.0\overline{3}$ each time.
- c) i) $\frac{5}{33}$
ii) $\frac{12}{33}$
- 2.a) 0.125; terminating
b) 0.6; terminating
c) $0.\overline{6}$; repeating
d) $0.538\overline{461}$; repeating
- 3.a) $\frac{1}{5}$ b) $\frac{8}{9}$ c) $\frac{1}{200}$ d) $\frac{23}{99}$
4. From least to greatest:
a) $\frac{11}{6}$, 2, $2\frac{1}{4}$, $\frac{8}{3}$ b) $1\frac{3}{4}$, $\frac{23}{8}$, 3.5
c) 1, $\frac{13}{10}$, $1\frac{3}{5}$, 1.75, $\frac{9}{5}$
5. Answers may vary. For example:
a) 1.5 b) 2.4 c) 1.5
- 6.a) 25.72 b) 137.521 c) 17.1
- 7.a) 3.585 kg b) 9.25 kg
- 8.a) 7.44 b) 4.706 c) 58.95
9. 9.94 km²
10. The division statements are equivalent.
- 11.a) 16.26 b) 50.5 c) 18.431

3.7 Relating Fractions, Decimals, and Percents, page 112

- 1.a) $\frac{3}{20}$, 15%, 0.15
b) $\frac{2}{5}$, 40%, 0.4
c) $\frac{4}{5}$, 80%, 0.8
- 2.a) $\frac{1}{50}$, 0.02

3.a) $2\frac{1}{6}$ b) $1\frac{1}{6}$ c) $2\frac{1}{6}$ d) $4\frac{1}{6}$

4.a) About $2\frac{1}{2}$; $\frac{9}{4} = 2\frac{1}{4}$

b) About $1\frac{1}{2}$; $\frac{3}{2} = 1\frac{1}{2}$

c) About $\frac{1}{2}$; $\frac{13}{20}$

d) About $1\frac{1}{2}$; $\frac{13}{20} = 1\frac{3}{10}$

5.a) i) $\frac{11}{5} = 2\frac{1}{5}$ ii) $\frac{25}{7} = 3\frac{4}{7}$

iii) $\frac{25}{6} = 4\frac{1}{6}$ iv) $\frac{50}{9} = 5\frac{5}{9}$

6.a) $2\frac{11}{20}$ b) $1\frac{2}{5}$ c) $2\frac{5}{12}$ d) $2\frac{1}{21}$

7.i) a) $2\frac{3}{10}$ b) $\frac{23}{10}$

c) Answers may vary. For example:

The first method is easier because $\frac{3}{5}$ is greater than $\frac{3}{10}$.

ii) a) $1\frac{7}{10}$ b) $\frac{17}{10}$

c) Answers may vary. For example:

The second method is easier because $\frac{3}{5}$ is less than $\frac{3}{10}$.

8. $1\frac{17}{40}$ cups

9. $\frac{11}{12}$ h

10.a) $\frac{19}{24}$ b) $\frac{31}{18}$ or $1\frac{13}{18}$

c) $\frac{44}{15}$ or $2\frac{14}{15}$ d) $\frac{101}{40}$ or $2\frac{21}{40}$

11.a) Estimates may vary.

For example: About $1\frac{1}{2}$

b) $\frac{35}{24}$ or $1\frac{11}{24}$ d) $\frac{29}{24}$ or $1\frac{5}{24}$

12. Answers may vary. For example: $\frac{21}{8}$ or $2\frac{5}{8}$

Unit 5 Unit Review, page 213

1.a) $\frac{13}{12}$ b) 1 c) $\frac{11}{12}$ d) $\frac{7}{10}$

2.a) $\frac{11}{9}$ b) $\frac{3}{2}$ c) $\frac{3}{4}$ d) $\frac{9}{8}$

3. Answers may vary. For example: $\frac{1}{4} + \frac{3}{8} = \frac{5}{8}$

4. Answers may vary. For example:

a) $\frac{12}{20}$ and $\frac{15}{20}$ b) $\frac{2}{5}$ and $\frac{1}{5}$

c) $\frac{8}{18}$ and $\frac{9}{18}$ d) $\frac{15}{24}$ and $\frac{4}{24}$

5.a) $\frac{4}{5}$ b) $\frac{13}{14}$ c) $\frac{29}{30}$ d) $\frac{17}{20}$

6.a) $1 - \frac{1}{3} = \frac{4}{6}$ b) $\frac{7}{10} - \frac{2}{5} = \frac{3}{10}$

c) $\frac{10}{12} - \frac{3}{4} = \frac{1}{12}$ d) $\frac{5}{8} - \frac{1}{4} = \frac{3}{8}$

7.a) $\frac{3}{5}$ b) $\frac{1}{2}$ c) $\frac{5}{12}$

8.a) Javon; $\frac{5}{6} > \frac{7}{9}$ b) $\frac{1}{18}$

9.a) $\frac{1}{2}$ b) $\frac{3}{2} = 1\frac{1}{2}$

c) $\frac{27}{20} = 1\frac{7}{20}$ d) $\frac{19}{12} = 1\frac{7}{12}$

10. Answers will vary. For example:

a) $\frac{4}{3} - \frac{5}{6} = \frac{1}{2}$ b) $\frac{31}{36} - \frac{1}{9} = \frac{3}{4}$ c) $\frac{17}{20} - \frac{3}{4} = \frac{1}{10}$

d) $\frac{5}{2} - \frac{7}{3} = \frac{1}{6}$ e) $\frac{5}{6} - \frac{7}{12} = \frac{1}{4}$

11.a) Brad b) $\frac{1}{8}$ bottle

12. $\frac{3}{8}$

13.a) $6\frac{2}{3}$ b) $1\frac{7}{12}$ c) $5\frac{1}{2}$ d) $6\frac{13}{20}$

14.a) $4\frac{1}{2}$ b) $4\frac{5}{8}$ c) $10\frac{1}{10}$ d) $8\frac{2}{9}$

15. $3\frac{5}{8}$ h

16.a) $\frac{33}{8}$, or $4\frac{1}{8}$ b) $\frac{25}{9}$, or $2\frac{7}{9}$

c) $\frac{19}{12}$, or $1\frac{7}{12}$ d) $\frac{47}{24}$, or $1\frac{23}{24}$

17.a) The second recipe; $1\frac{7}{9} > 1\frac{3}{4}$

b) $\frac{1}{8}$ cup

18.a) $\frac{25}{6}$, or $4\frac{1}{6}$ b) $\frac{49}{30}$, or $1\frac{19}{30}$

c) $\frac{169}{24}$, or $7\frac{1}{24}$ d) $\frac{3}{4}$

19. $\frac{5}{6}$ h

Unit 5 Practice Test, page 215

1.a) 2 b) $\frac{19}{30}$

- c) $\frac{1}{4}$ d) $\frac{29}{18} = 1\frac{11}{18}$
2. Answers may vary. For example:
 a) $\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$ b) $\frac{1}{35} + \frac{4}{7} = \frac{3}{5}$
3. Answers may vary. For example:
 a) $\frac{3}{8} - \frac{1}{8} = \frac{1}{4}$ b) $\frac{3}{4} - \frac{1}{2} = \frac{1}{4}$
- 4.a) $\frac{343}{40}$, or $8\frac{23}{40}$ b) $\frac{13}{10}$, or $1\frac{3}{10}$
5. $7\frac{3}{4}$ h; Answers may vary. For example: No, Lana cannot do all the jobs. If she allows at least 3 h to travel from one place to another and $\frac{1}{2}$ h for her lunch break, her total time is $11\frac{1}{4}$ h.
- 6.a) $\frac{1}{2} + \frac{1}{4} = \frac{3}{4}$ b) $\frac{1}{2} + \frac{1}{8} = \frac{5}{8}$
7. Answers may vary. For example:
 Counter 1: $\frac{1}{6}$ and $\frac{7}{12}$, Counter 2: $\frac{5}{12}$ and $\frac{2}{3}$

Unit 6 Equations, page 218

6.1 Solving Equations, page 223

- 1.a) equation b) expression c) expression
 d) equation e) expression f) equation
- 2.a) $w = 12$ d) $x = 96$ f) $z = 11$
- 3.a) $x - 10 = 35$ b) $x = 45$
- 4.a) $7 + n = 18$; $n = 11$ b) $n - 6 = 24$; $n = 30$
 c) $5n = 45$; $n = 9$ d) $\frac{n}{6} = 7$; $n = 42$
 e) $4n + 3 = 19$; $n = 4$
- 5.a) $14x = 182$; $x = 13$ b) $b - 14 = 53$; $b = 67$
 c) $100 = 56 + 11p$; $p = 4$
6. For example: a) $4s = 48$ b) $s = 12$
7. For example: a) $\frac{p}{6} = 11$ b) $p = 66$
8. Answers may vary. For example:
 a) The perimeter of a triangle is 27 cm. Write an equation you can solve to find the side length of the triangle.
 b) $27 = 3t$ c) $t = 9$
- 9.a) $130 = 10 + 24f$ b) $f = 5$
- 10.a) $n = 9$ b) $n = 12$ c) $n = 15$ d) $n = 81$
- 11.a) $x = 3$ b) $y = 6$ c) $z = 2166$ d) $x = 5$

6.2 Using a Model to Solve Equations, page 229

- 1.a) A = 30 g b) B = 65 g
 c) C = 50 g d) D = 21 g

- 2.b) i) $x = 7$
 ii) $x = 14$
 iii) $y = 3$
 iv) $m = 7$
 v) $k = 8$
 vi) $p = 21$
- 3.i) a) $5 + n = 24$ b) $n = 19$
 ii) a) $n + 8 = 32$ b) $n = 24$
 iii) a) $3n = 42$ b) $n = 14$
 iv) a) $2n + 5 = 37$ b) $n = 16$
- 4.a) $60 = 12h$; $h = 5$ m b) $112 = 8h$; $h = 14$ cm
 c) $169 = 13h$; $h = 13$ m
- 5.a) Left pan: x and 35 g; right pan: 35 g and 25 g
 b) $x = 25$
6. Problems may vary. For example:
 a) Helen is 16 years old. Kian is 4 years younger than Helen. How old is Kian?
 b) Helen is 4 years older than Kian. Kian is 16 years old. How old is Helen?
 c) Part a: $x = 12$; part b: $x = 20$
7. Answers may vary. The sum of the digits should be a multiple of nine. For example:
 $5 + x + 7 = 18$, $x = 6$;
 567 is divisible by 9.

6.3 Solving Equations Involving Integers, page 234

- 1.a) $x = 4$ b) $x = 7$ c) $x = 10$
 d) $x = 12$ e) $x = 13$ f) $x = 14$
- 2.a) $n = 13$ b) $x = 2$ c) $p = 7$
 d) $x = -5$ e) $s = -14$ f) $x = 3$
3. $x = 17$
4. $f - 6 = 5$; $f = 11$
- 5.a) $t - 8 = -3$ b) $t = 5$
- 6.a) $x = 7$ b) $n = 19$
- 7.a) $n + 2 = 4$; +2
 b) $n - 2 = 1$; +3
 c) $n - 4 = -2$; +2

Unit 6 Mid-Unit Review, page 236

- 1.a) i) $5 + d = 12$; $d = 7$
 ii) $2d = 12$; $d = 6$
 b) i) $67 + s = 92$; $s = 25$
 ii) $3w + 8 = 29$; $w = 7$
- 2.i) a) $n + 9 = 17$ c) $n = 8$
 ii) a) $3n = 21$ c) $n = 7$
 iii) a) $7 + 2n = 19$ c) $n = 6$
3. $40 = 14 + 2B$; Bill is 13 years old.
- 4.i) a) $n - 8 = 7$ c) $n = 15$
 ii) a) $t - 6 = -4$ c) $t = 2$
 iii) a) $m - 7 = 5$ c) $m = 12$