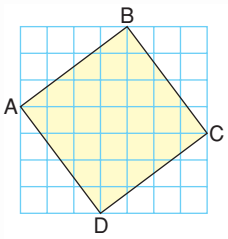
Practice Test

1. Find.
Give your answers to two decimal places where needed.
a) $\sqrt{121}$ **b)** 14^2
c) $\sqrt{40}$ **d)** the square of 9

2. Explain why $\sqrt{1} = 1$.

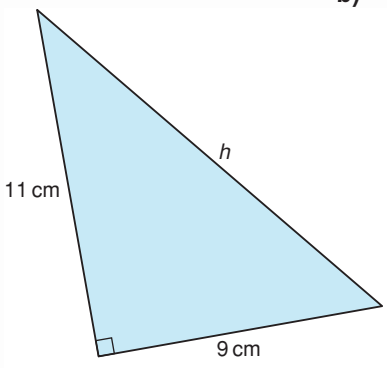
3. A square tabletop has perimeter 32 cm.
What is the area of the tabletop? Explain your thinking.
Include a diagram.

4. **a)** What is the area of square ABCD?
b) What is the length of line segment AB?
Explain your reasoning.

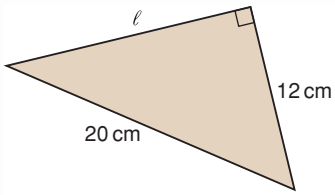


5. The area of a square on each side of a triangle is given.
Is the triangle a right triangle?
How do you know?
a) 15 cm^2, 9 cm^2, 24 cm^2
b) 11 cm^2, 7 cm^2, 20 cm^2

6. Find the length of each side labelled with a variable.
Give your answers to one decimal place where needed.
a)



b)



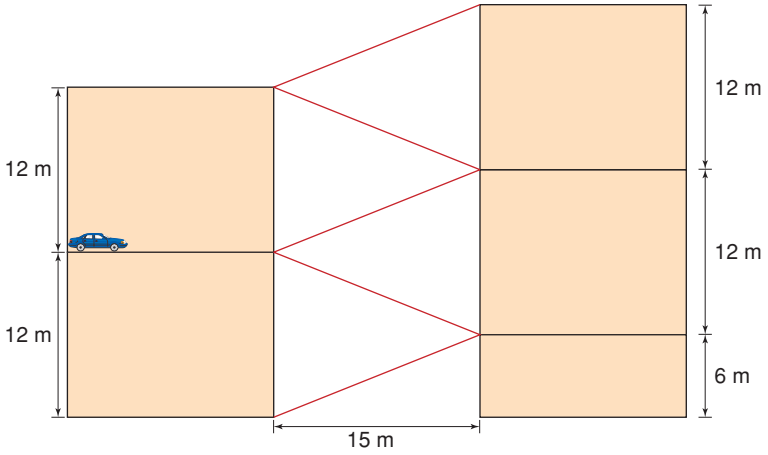
7. Which of the sets of numbers below is a Pythagorean triple?
How did you find out?

a) 20, 48, 54 **b)** 18, 24, 30

8. A parking garage in a shopping mall has ramps from one level to the next.

a) How long is each ramp?

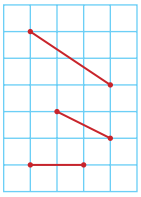
b) What is the total length of the ramps?



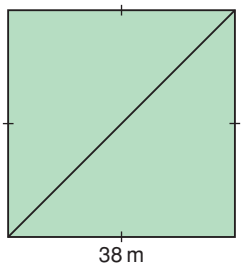
9. Draw these 3 line segments on 1-cm grid paper.

a) Find the length of each line segment to one decimal place.

b) Could these line segments be arranged to form a triangle?
If your answer is no, explain why not.
If your answer is yes, could they form a right triangle?
Explain.



10. Rocco runs diagonally across a square field.
The side of the field has length 38 m.
How many times will Rocco have to run diagonally across the field to run a total distance of 1 km?
Give your answer to the nearest whole number.



Practice Test

1. Evaluate.

a) $(+9) \times (+10)$ **b)** $(+6) \times (-11)$ **c)** $(+96) \div (-16)$

d) $(+39) \div (+3)$ **e)** $(-8) \times (+6)$ **f)** $(-36) \div (+9)$

g) $(-44) \div (-4)$ **h)** $(-5) \times (-1)$

2. Evaluate.

a) $(-20)(-5) + 16 \div (-8)$ **b)** $\frac{14 - 10 \div 2}{-3}$

c) $\frac{[(-9) - (-2)] \times [8 + (-4)]}{(-14) \div (-2)}$ **d)** $[7 - (-2)] \times 2 + (-12) \div (-4)$

3. The temperature on Sunday was 4°C. The temperature dropped 8°C on Monday and dropped twice as much on Tuesday. What was the temperature on Tuesday? How did you decide which operations to use?

4. Suppose you own a store.
Use integers to model each situation.
For each situation, calculate the money you receive or spend.

a) Six people come into your store. Each person buys items worth $15.

b) You pay 3 bills. Each bill is for $35.

c) A supplier gives you $7 for each case of his product that you sell. You sold 9 cases this month.

5. Use the integers below.
0, –2, +3, –1, +1, +2, +4

a) Find two pairs of integers that have a quotient of –2.

b) Which two integers have the greatest product?

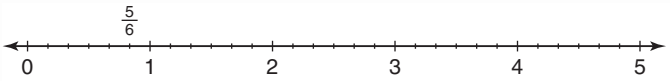
c) Which two integers have the least sum?

d) Which two integers have a quotient less than –3?

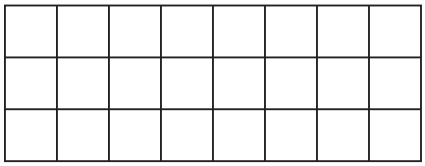
e) Write your own problem using two of the integers. Solve your problem. Show your work.

Practice Test

1. Use a number line to divide: $5 \div \frac{5}{6}$



2. Copy this rectangle.
Shade the rectangle to find the product:
$\frac{5}{8} \times \frac{2}{3}$



3. Find each product and quotient.

a) $\frac{1}{4} \times 28$ **b)** $\frac{3}{8} \times \frac{1}{2}$ **c)** $\frac{5}{6} \div 2$ **d)** $\frac{1}{5} \div \frac{2}{3}$

4. Find each product and quotient.
Estimate to check each solution is reasonable.

a) $\frac{5}{8} \times 3\frac{1}{4}$ **b)** $3\frac{1}{3} \times 2\frac{1}{10}$ **c)** $2\frac{1}{4} \div \frac{7}{8}$ **d)** $1\frac{2}{5} \div 1\frac{1}{2}$

5. Three-fifths of the Grade 8 class are in the band.

a) On Tuesday, only $\frac{1}{3}$ of these students went to band practice.
What fraction of the class went to band practice on Tuesday?

b) How many students might be in the class?
How do you know?

6. Predict without calculating. Which statement below has the greatest value?
How do you know?

a) $\frac{7}{3} \times \frac{3}{4}$ **b)** $\frac{7}{3} - \frac{3}{4}$ **c)** $\frac{7}{3} \div \frac{3}{4}$ **d)** $\frac{7}{3} + \frac{3}{4}$

7. Multiply a fraction by its reciprocal. What is the product?
Use an example and a model to explain.

8. Evaluate.

a) $\frac{1}{2} - \frac{3}{5} \times \frac{1}{6}$ **b)** $\frac{1}{4} \div \frac{1}{8} + (\frac{1}{2} - \frac{3}{8})$

9. A dog groomer takes $\frac{5}{6}$ h to groom a poodle.

a) Estimate the number of poodles the groomer can groom in $4\frac{1}{2}$ h.

b) Sketch a number line to illustrate the answer.

c) Calculate the number of poodles the groomer can groom in $4\frac{1}{2}$ h.

d) What assumptions do you make?

10. Solve each problem.
Explain how you decided which operation or operations to use.

a) Haden is making a milkshake.
He has $\frac{1}{3}$ cup of milk in a glass.

How much milk must Haden add so there will be $\frac{4}{5}$ cups of milk in the glass?

b) Lacy, Lamar, and Patti own a dog-walking business.
Lacy owns $\frac{5}{12}$ of the business and Lamar owns $\frac{1}{3}$ of the business.
How much of the business does Patti own?

c) The science teacher has $2\frac{1}{4}$ cups of baking soda and $1\frac{1}{3}$ cups of salt.

To conduct an experiment, each student needs $\frac{1}{8}$ cup of baking soda and $\frac{1}{12}$ cup of salt. There are 18 students in the class.

i) Does the teacher have enough baking soda for each student?
If not, how much more baking soda does the teacher need?

ii) Does the teacher have enough salt for each student?
If not, how much more salt does the teacher need?

11. Which of these statements is always true?
Use examples to support your answer.

a) Division always results in a quotient that is less than the dividend.

b) Division always results in a quotient that is greater than the dividend.

c) Division sometimes results in a quotient that is less than the dividend and sometimes in a quotient that is greater than the dividend.

b) 40, since $32^2 + 24^2 = 40^2$
c) 35, since $12^2 + 35^2 = 37^2$
d) 99, since $20^2 + 99^2 = 101^2$

13. Hold the 1st, 4th, and 8th knots to form a right triangle with side lengths 3 units, 4 units, and 5 units.

14. Yes; Since $48^2 + 55^2 = 73^2$; all angles are right angles.

15. 40 m and 9 m, since $9 + 40 + 41 = 90$ and $9^2 + 40^2 = 41^2$

16.a) For obtuse triangles, the area of the square on the longest side is greater than the sum of the areas of the squares on the two smaller sides.

b) For acute triangles, the area of the square on the largest side is less than the sum of the areas of the squares on the two smaller sides.

c) In question 6,
- the acute triangle is: b
- the right triangles are: a, c, d, h
- the obtuse triangles are: e, f, g

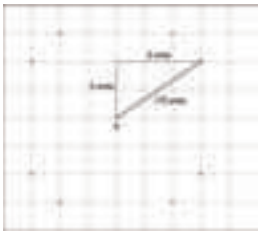
17. Answers will vary. For example:
Lesser number: 8; Greater number: 14
Triple: 224, 132, 260

1.7 Applying the Pythagorean Theorem, page 49

4.a) 29 cm **b)** 12.2 cm **c)** 15.8 cm
5.a) 24 cm **b)** 15 cm **c)** 5.7 cm
6. 4 m
7.a) 26 cm or 21.8 cm
b) The unknown side could be a leg or the hypotenuse of the right triangle.
8.a) 6.7 units **b)** 7.8 units
9. 65 cm
10. 91 m
11. 38.18 m
12.a) The area of the square on the hypotenuse is equal to the sum of the areas of the squares on the legs.
b) The square of the length of the hypotenuse is equal to the sum of the squares of the lengths of the legs.
13. 57.4 cm
14. F; I drew two right triangles with hypotenuses AB and AF. The legs of both triangles were 4 units and 3 units.
15. 5.8 units **16.** 216.9 m
17. Yes; $650^2 + 720^2 = 970^2$
18. 403.1 km **19.** 7.6 cm **20.** 17 cm
21. 37.3 m **22.** 291.2 km

Unit 1 Unit Review, page 54

1. Rectangles: 1 unit by 24 units, 2 units by 12 units, 3 units by 8 units, 4 units by 6 units
Not a perfect square since 24 cannot be modelled by a square
2. 25
3. Answers may vary. For example: 16, 25, 1024, 1600, 2401, 2500
4.a) 25 **b)** 49 **c)** 81 **d)** 169
5.a) 7 **b)** 17 **c)** 20
6.a) i) 1, 2, 3, 4, 6, 9, 12, 18, 27, 36, 54, 108
ii) 1, 19, 361
iii) 1, 2, 3, 5, 6, 10, 15, 25, 30, 50, 75, 150
iv) 1, 2, 11, 13, 22, 26, 143, 286
v) 1, 2, 3, 4, 6, 9, 12, 18, 27, 36, 54, 81, 108, 162, 324
vi) 1, 2, 4, 7, 8, 14, 28, 56
b) 361 and 324; Both have an odd number of factors.
7. 44 cm
8. A = 17 square units; $s = \sqrt{17}$ units
9.a) $\sqrt{75}$ cm **b)** $\sqrt{96}$ cm **c)** 9 cm
10. b; I drew a square on each line segment and found the area. Square b has a greater area.
11.a) 26 **b)** 5 **c)** 50 **d)** 13
12.a) 6 and 7 **b)** 9 and 10
c) 10 and 11 **d)** 34 and 35
13.a) 2 **b)** 3 **c)** 5 **d)** 6 **e)** 8 **f)** 9
14.a) 7.4 **b)** 8.7 **c)** 9.7 **d)** 10.2 **e)** 6.8 **f)** 10.7
15. 8.49, since $8.48^2 = 71.9104$ and $8.49^2 = 72.0801$
16. 130 cm
17.a) False **b)** True **c)** True
18.a) 34 cm **b)** 28 cm **c)** 16.2 cm
19.a) 8.5 cm **b)** 7.8 cm
20. Yes, since $24 + 57 = 81$
21. No; $7^2 + 12^2 \neq 15^2$
22. a and c
23. 21; One solution, because in a Pythagorean triple all three numbers must be whole numbers
24. 40 km
25. 42 cm
26. The distance from each possible position to x is the hypotenuse of a right triangle with legs lengths 2 units and 3 units.



27. 31.2 km

Unit 1 Practice Test, page 58

1.a) 11 **b)** 196 **c)** 6.32 **d)** 81
2. $\sqrt{1} = \sqrt{1 \times 1} = 1$
3. s = 8 cm, A = 64 cm^2
4.a) 25 square units **b)** 5 units
5.a) Yes; $15 + 9 = 24$ **b)** No; $11 + 7 \neq 20$
6.a) 14.2 cm **b)** 16 cm
7.a) No; $20^2 + 48^2 \neq 54^2$ **b)** Yes; $18^2 + 24^2 = 30^2$
8.a) 16.2 m **b)** 81 m
9.a) 3.6 cm, 2.2 cm, 2.0 cm

b) The line segments could form a triangle because $2.0 + 2.2 > 3.6$.
They could not form a right triangle because $2.0^2 + 2.2^2 \neq 3.6^2$.

10. 19 times

Unit 1 Unit Problem: The Locker Problem, page 61

2. 1, 4, 9, 16, and 25; All numbers are perfect squares.

3. 1, 4, 9, 16, 25, 36, 49, 64, 81, 100

4. 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225, 256, 289, 324, 361, 400

5. Open lockers have perfect squares as numbers. The number of students that change the locker corresponds to the number of factors for that locker number. All perfect squares have an odd number of factors, so those lockers are open.

6. The numbers in the third column are the consecutive odd numbers beginning at 3.

7.a) Every odd square number will appear in the third column if you continue the table far enough.

b) No, the difference between 2 consecutive odd numbers is always an odd number.

c) 25 **d)** 12, 13, 5 and 24, 25, 7

e) 9, 40, 41

Unit 2 Integers, page 62

2.1 Using Models to Multiply Integers, page 68

5.a) $(+3) \times (-1) = -3$ **b)** $(+5) \times (-2) = -10$

c) $(+4) \times (+11) = +44$

6.a) $(-4) + (-4) + (-4) + (-4) + (-4) + (-4) + (-4) = -28$

b) $(+3) + (+3) + (+3) + (+3) + (+3) + (+3) = +18$

c) $(+6) + (+6) + (+6) + (+6) = +24$

d) $(-6) + (-6) + (-6) + (-6) + (-6) = -30$

7.a) $(+3) \times (+3) = +9$ **b)** $(+4) \times (-2) = -8$

8.a) –6 **b)** +27 **c)** +12 **d)** –20

9.a) $(+5) \times (-2) = -10$ **b)** $(+5) \times (+2) = +10$

c) $(-7) \times (-3) = +21$ **d)** $(-9) \times (+4) = -36$

e) $(+11) \times (+3) = +33$ **f)** $(-10) \times (-5) = +50$

10.a) +5 **b)** +24 **c)** –14 **d)** –24 **e)** –30 **f)** +32

11.a) +8 **b)** +8 **c)** +16 **d)** –30 **e)** –24 **f)** +21

12. $(+2) \times (+9) = +18$; The temperature rose 18°C.

13. $(-3) \times (+11) = -33$; The water level dropped 33 cm.

14.a) Answers will vary. For example:
Olinga withdraws $6 from his bank account every day for 8 days. $(+8) \times (-6) = -48$

15. Use tiles: withdraw 7 sets of 8 red tiles.
Use a number line: Face the negative end and take 7 steps backward each of size 8.
$(-7) \times (-8) = +56$

16. $(-4) \times (+4) = -16$

17.a) $(+8) \times (-5) = -40$; He will have $40 less.

b) $(-2) \times (-5) = +10$; He had $10 more.

18.a) –40 or 40 cm to the left

b) +12 or 12 cm to the right

c) $(-4) \times (+10) = -40$
$(-3) \times (-4) = +12$

19. Answers may vary. For example:
Hugh threw out 7 cartons each with half a dozen eggs. How many eggs did he throw out?
$(-7) \times (+6) = -42$

20.a) –24 **b)** +15 **c)** –30 **d)** +36

2.2 Developing Rules to Multiply Integers, page 73

3.a) Negative **b)** Positive

c) Negative **d)** Positive

4.a) –24 **b)** +20 **c)** –27 **d)** –42 **e)** –30

f) +42 **g)** 0 **h)** –10 **i)** +56 **j)** –81

5.a) i) –21, –21 **ii)** +32, +32

iii) +45, +45 **iv)** –60, –60

b) No

6.a) +300 **b)** +780 **c)** –1600 **d)** –840

e) –780 **f)** –2640 **g)** +3290 **h)** +4680

7.a) –300 **b)** –945 **c)** +544 **d)** –666

e) +221 **f)** –3024 **g)** +1275 **h)** +667

8.a) +4 **b)** –3 **c)** +6 **d)** –6

e) –4 **f)** –12 **g)** –30 **h)** –6

9.a) +16, +32, +64; Multiply by +2 each time.

b) +1296, –7776, +46 656; Multiply by –6 each time.

c) –81, +243, –729; Multiply by –3 each time.

d) –4, +4, –4; Multiply by –1 each time.

10. $(+17) \times (-26) = -442$; Gaston withdrew $442.

11.a) –8 and –5 **b)** +9 and –8

12.a) i) +6 **ii)** –24 **iii)** +120

iv) –720 **v)** +5040 **vi)** –40 320

vii) +362 880 **viii)** –3 628 800

b) i) Positive **ii)** Negative

c) Yes

13.a) $(+60) \times (-20) = -1200$; Amelie wrote +1200 instead of –1200.

b) –1080

14. Answers will vary. For example:
Gavin ate 15 handfuls of 8 jelly beans. How many jelly beans did he eat?
$(+15) \times (-8) = -120$; Gavin ate 120 jelly beans.

15. When you multiply an integer by itself, you multiply two integers with the same sign. This always gives a positive product.

2.a) +35 **b)** –60 **c)** –16 **d)** +48
3. –10°C
4.a) Negative **b)** Positive
c) Negative **d)** Positive
5.a) –63 **b)** +28 **c)** –143
d) +880 **e)** –17 **f)** 0
6.a) –6 **b)** +10 **c)** 0 **d)** +15
7. (–55) × 6 = –330; 330 mL
8. Answers will vary. For example:
Jari spends $7 on lunch at school. How much does it cost him to buy lunch for 5 school days?
(+5) × (–7) = –35; $35
9.a) +5 **b)** –4 **c)** –3 **d)** +9
10.a) –6 **b)** +7 **c)** –7 **d)** +5
11.a) 13 weeks **b)** (–65) ÷ (–5) = +13
c) Tyler has $65 to withdraw.
12.a) Negative **b)** Positive
c) Negative **d)** Positive
13.a) +8 **b)** –8 **c)** –11 **d)** +14
14.a) +9 **b)** –4 **c)** –3 **d)** 0
15.a) –2 **b)** –3 **c)** +5 **d)** +9
16.a) (–63) ÷ (–3) **b)** +21; 21 days
c) She does not return any of the candies to the jar.
17. Answers may vary. For example:
Renira returned 9 glasses to a store. She received $72 in store credit. What was the average cost of a glass? (+72) ÷ (–9) = –8; $8
18. (–21) ÷ (–1) = +21; (–21) ÷ (+1) = –21
(–21) ÷ (–3) = +7; (–21) ÷ (+3) = –7
(–21) ÷ (–7) = +3; (–21) ÷ (+7) = –3
(–21) ÷ (–21) = +1; (–21) ÷ (+21) = –1
19.a) Multiply **b)** Divide
c) Subtract **d)** Multiply
20.a) 16 **b)** –1 **c)** 2 **d)** 12
21.a) –16 **b)** –1 **c)** 12 **d)** –18
22.a) 3 **b)** –3 **c)** –4
23.a) +1 **b)** +2 **c)** +6
24.a) Corey: +1; Suzanne: –2 **b)** Corey

Unit 2 Practice Test, page 99

1.a) +90 **b)** –66 **c)** –6 **d)** +13
e) –48 **f)** –4 **g)** +11 **h)** +5
2.a) +98 **b)** –3 **c)** –4 **d)** +21
3. –20°C
4.a) Receive $90 **b)** Spend $105
c) Receive $63
5.a) Answers may vary. For example:
–2 and +1, +2 and –1
b) +3 and +4 **c)** –2 and –1 **d)** +4 and –1
e) Answers may vary. For example: Find all pairs of integers with a difference of –2.
+2 and +4, 0 and +2, –2 and 0, +1 and +3, –1 and +1

Unit 2 Unit Problem: Charity Golf Tournament, page 100

1.a) 3(0) + 2(+1) + (–1) + 2(–2) + (+2)
b) –1 or 1 under par
2.a) 4, 4, 4, 2, 3 **b)** 31 **c)** –1 or 1 under par
3.a) Kyle: 35 **b)** Delaney: 28
c) Hamid: 26
4.a) Hamid, Hanna, Delaney, Chai Kim, Kyle, Weng Kwong
b) Hamid; –6
c) Hanna and Delaney; –5 and –4

Unit 3 Operations with Fractions, page 102

3.1 Using Models to Multiply Fractions and Whole Numbers, page 108

5.a) $\frac{5}{9}\times 45;\ 45\times\frac{5}{9}$ **b)** $\frac{3}{8}\times 32;\ 32\times\frac{3}{8}$
c) $\frac{1}{12}\times 36;\ 36\times\frac{1}{12}$ **d)** $\frac{4}{5}\times 25;\ 25\times\frac{4}{5}$
6.a) $3\times\frac{1}{4};\ \frac{1}{4}\times 3$ **b)** $7\times\frac{2}{5};\ \frac{2}{5}\times 7$
c) $4\times\frac{3}{10};\ \frac{3}{10}\times 4$
7.a) $\frac{2}{3}+\frac{2}{3}+\frac{2}{3}+\frac{2}{3}+\frac{2}{3}+\frac{2}{3}$ **b)** 4
c)

d) $\frac{2}{3}\times 6 = 4$
8.a) $4\times\frac{4}{5} = 3\frac{1}{5}$ **b)** $9\times\frac{1}{2} = 4\frac{1}{2}$
c) $3\times\frac{5}{6} = 2\frac{1}{2}$
9.a) $5\times\frac{1}{2} = \frac{5}{2}$ **b)** $4\times\frac{3}{4} = 3$
10.a) $4\times\frac{1}{2} = 2$ **b)** $5\times\frac{2}{3} = 3\frac{1}{3}$
11.a) $5\times\frac{1}{8} = \frac{5}{8}$

b) $\frac{2}{5}\times 3 = 1\frac{1}{5}$

c) $4\times\frac{5}{12} = 1\frac{2}{3}$

12.a) 12 **b)** 8 **c)** 6 **d)** 4 **e)** 3 **f)** 2
13.a) 24 **b)** 16 **c)** 18 **d)** 20 **e)** 9 **f)** 10

9.a) $\frac{15}{2}$ **b)** $\frac{23}{8}$ **c)** $\frac{107}{10}$

10.a) $3\frac{1}{2}$ **b)** $7\frac{3}{5}$ **c)** $\frac{4}{5}$ **d)** $7\frac{1}{2}$

11.a) $3\frac{1}{6}$ **b)** $2\frac{13}{16}$ **c)** $3\frac{3}{20}$ **d)** $8\frac{2}{3}$

12. $4\frac{1}{12}$ h assuming that he mows at the same rate

13.a) $\frac{1}{10}$ **b)** 12

14.a) $3\frac{3}{4}$ **b)** $4\frac{4}{5}$ **c)** $\frac{3}{20}$ **d)** $\frac{7}{8}$

15. 16 glasses

16. $13\frac{1}{2}$ loads

17. For example: $\frac{3}{4} \div 5 = \frac{3}{20} < 1$

18.a) $1\frac{1}{2}$ **b)** $1\frac{1}{2}$

19.a) 2 **b)** $\frac{2}{7}$ **c)** $1\frac{1}{4}$ **d)** $\frac{5}{6}$

20. $5\frac{1}{4}$

21. For example: $\frac{3}{5} \div \frac{5}{3} = \frac{9}{25} < 1$

22.a) $\frac{40}{11}$ **b)** $\frac{31}{6}$ **c)** $\frac{44}{9}$ **d)** $\frac{29}{12}$

23.a) $\frac{14}{17}$ **b)** $1\frac{49}{66}$ **c)** $2\frac{6}{11}$ **d)** $\frac{1}{2}$

24. $4\frac{3}{5}$

25. $\frac{1}{8}$

26. 882 tickets

27.a) $\frac{3}{10}$ **b)** 9 students

28.a) $\frac{3}{5}$; Multiplication **b)** $2\frac{2}{11}$; Subtraction

c) $2\frac{2}{5}$; Multiplication **d)** $\frac{3}{5}$; Division

29.a) $\frac{3}{4}$ **b)** $1\frac{3}{4}$ **c)** $\frac{1}{2}$ **d)** $\frac{5}{36}$

30. Carlton should have written $\frac{14}{5} \div \frac{9}{12} = \frac{14}{5} \times \frac{12}{9}$.

Correct answer: $3\frac{11}{15}$

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1. 6 **2.** $\frac{5}{12}$

3.a) 7 **b)** $\frac{3}{16}$ **c)** $\frac{5}{12}$ **d)** $\frac{3}{10}$

4.a) $2\frac{1}{32}$ **b)** 7 **c)** $2\frac{4}{7}$ **d)** $\frac{14}{15}$

5.a) $\frac{1}{5}$

b) 30 since $\frac{3}{5}$ of 30 is 18 and $\frac{1}{3}$ of 30 is 10, which are both whole numbers

6.a) $1\frac{3}{4}$ **b)** $1\frac{7}{12}$ **c)** $3\frac{1}{9}$ **d)** $3\frac{1}{12}$

7. The product of a fraction and its reciprocal is 1.

For example: $\frac{7}{8} \times \frac{8}{7} = \frac{56}{56} = 1$

8.a) $\frac{2}{5}$ **b)** $2\frac{1}{8}$

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

b)

c) About 5

d) Each poodle takes the same amount of time to groom.

10.a) $\frac{7}{15}$ **b)** $\frac{1}{4}$

c) i) Yes **ii)** No; $\frac{1}{6}$ cups

11.a) No **b)** No **c)** Yes

Cumulative Review Units 1–3, page 167

1.a) i) 1, 2, 3, 4, 6, 7, 12, 14, 21, 28, 42, 84
ii) 1, 3, 7, 9, 21, 49, 63, 147, 441
iii) 1, 2, 4, 59, 118, 236
iv) 1, 2, 3, 4, 5, 6, 9, 10, 12, 15, 18, 20, 25, 30, 36, 45, 50, 60, 75, 90, 100, 150, 180, 225, 300, 450, 900

b) 441 and 900; Both have an odd number of factors.

2.a) 7.2 **b)** 7.9 **c)** 9.5 **d)** 8.7

3.a) 32.5 cm **b)** 27.5 cm

4.a) No; $16 + 8 \neq 30$ **b)** Yes; $16 + 8 = 24$

5.a) No; $2^2 + 5^2 \neq 6^2$ **b)** Yes; $6^2 + 8^2 = 10^2$

c) No; $9^2 + 7^2 \neq 12^2$ **d)** Yes; $18^2 + 24^2 = 30^2$

6. 5 cm

7. 31.1 m

8.a) –72 **b)** +112 **c)** +18 **d)** –126

9.a) (+4) × (–5) **b)** –20

10. For example: Paul withdraws $5 from his account for 8 days. How much has he withdrawn in total?
(+8) × (–5) = –40; $40

11.a) –11 **b)** +21 **c)** +30 **d)** –4 **e)** –17 **f)** 0

12.a) –7 **b)** +5 **c)** –6 **d)** +7

13.a) (–52) ÷ (+4) **b)** –13; $13

14. Answers will vary. For example:

a) i) (–10) + (+2) = –8 **ii)** (+2) – (+10) = –8
iii) (–4) × (+2) = –8 **iv)** (–16) ÷ (+2) = –8

b) i) (–4) + (+2) = –2 **ii)** (+1) – (+3) = –2