Chapter 2 – Integers

- ✓ Use models to multiply integers
- ✓ Develop rules to multiply integers
- ✓ Use models to divide integers
- ✓ Develop rules to divide integers
- ✓ Order of operations with integers

Extra practice: text book pages 97-98

In Your Words

Here are some of the important mathematical words of this unit.
Build your own glossary by recording definitions and examples here. The first one is done for you.

integer *the numbers ..., -3, -2, -1, 0, 1, 2, 3, ...*

For example, 1, 2, 3, ... are positive integers and -1, -2, -3, ... are negative integers. 0 is neither positive nor negative.

quotient

zero pair

commutative property

zero property

order of operations

List other mathematical words you need to know.

Unit Review

LESSON

2.1 **1.** Write each multiplication as a repeated addition. Then illustrate using coloured tiles to find each sum.

a) $(+5) \times (-2) =$ _____

$=$ _____

b) $(+3) \times (+5) =$ _____

$=$ _____

c) $(+3) \times (-3) =$ _____

$=$ _____

d) $(-4) \times (+2) = (+2) \times$ _____

$=$ _____

$=$ _____

2. Use a number line. Find each product.

a) $(+5) \times (-1) =$ _____

b) $(+3) \times (+4) =$ _____

c) $(-2) \times (+6) =$ _____

d) $(+4) \times (-5) =$ _____

LESSON

3. a) The temperature rose 2°C each hour for 6 h. Use integers to find the total change in temperature.

b) If the starting temperature was –4°C, what was the temperature after 6 h?

4. Show how to model $(-2) \times (-5)$. Explain why you chose that model.

2.2 **5.** Complete each statement using positive, negative, or zero.

a) The product of a positive integer and a negative integer is _____.

b) The product of a negative integer and zero is _____.

c) The product of an two negative integers is _____.

6. Find each product.

a) $(+2)(+3) =$ _____ b) $(-6)(+4) =$ _____

c) $(-22)(-10) =$ _____ d) $(+24)(-30) =$ _____

e) $(-36)(-5) =$ _____ f) $(+42)(+3) =$ _____

g) $(-81)(+2) =$ _____ h) $(-237)(0) =$ _____

7. Fill in the blank to make each equation true.

a) $(-6) \times$ _____ $= -24$ b) $(-9) \times$ _____ $= +27$

c) _____ $\times (-3) = (-21)$ d) $(-4) \times$ _____ $= +24$

e) $(+20) \times$ _____ $= +300$ f) $(-32) \times$ _____ $= -160$

LESSON 2.3

8. Write a related multiplication equation for each division equation.

a) $(+100) \div (-25) = -4$

b) $(-28) \div (-7) = +4$

c) $\frac{(-15)}{(-5)} = +3$

d) $\frac{(+48)}{(+12)} = +4$

9. Show how to model $(-12) \div 4$.

2.4 **10.** Decide whether each quotient will be positive, negative, or zero. Then evaluate each quotient.

a) $(-25) \div (-5)$ _____

b) $(-36) \div (+9)$ _____

c) $\frac{(+42)}{(-7)}$ _____

d) $0 \div (-5)$ _____

11. Evaluate each quotient and order the results from least to greatest.

a) $(-20) \div (+4) =$ _____ b) $(-18) \div (-6) =$ _____ c) $(+48) \div (-8) =$ _____

The quotients from least to greatest are: _____

12. Find all of the divisors of –16. Write a division equation each time. The first one has been done for you.

Divisor	Division Equation
–1	$(-16) \div (-1) = +16$

LESSON

13. Write the next 3 terms in each pattern. Then write the pattern rule.

a) +1, –4, +16, –64, _____, _____, _____, …

Pattern rule: Start at ___. _____ each time.

b) –128, +64, –32, 16, _____, _____, _____, …

Pattern rule: Start at _____. _____ each time.

c) –3125, +625, –125, _____, _____, _____, …

Pattern rule: Start at _____. _____ each time.

2.5 **14.** State which operation you would do first. Do not evaluate.

a) (+8) + (–2) × (–3)

_____

b) (–20) ÷ (–4) – (–2)

_____

c) (–2)(4 – 5)

_____

d) 5 – 3 + (–4) × (–2)

_____

15. Evaluate each expression in question 14. Show all your steps.

a)

b)

c)

d)

LESSON

16. Evaluate using the order of operations.

a) $17 - 4 \times 4 =$

b) $-48 \div 4 - 2(3 - 4) =$

c) $-2 - 4 \times 9 =$

d) $\frac{(-6)(8-2)}{-4} =$

e) $(-3) \times (-3) + (-4) \times (-4) =$

f) $\frac{21 + 2(3)}{(-3) \times (-3)} =$

Chapter 3
Operations with fractions

- ✓ Using models to multiply fractions with whole numbers
- ✓ Using models and symbols to multiply fractions
- ✓ Multiplying mixed numbers
- ✓ Dividing whole numbers and fractions
- ✓ Dividing fractions and mixed numbers
- ✓ Solving problems using fractions
- ✓ Order of operations with fractions

Extra practice: text book pages 159 -161

In Your Words

Here are some of the important mathematical words of this unit.
Build your own glossary by recording definitions and examples here. The first one is done for you.

proper and improper fractions

proper fractions have numerator less than denominator; improper fractions have numerator greater than denominator

simplest form of a fraction

reciprocal of a fraction

mixed number

quotient

order of operations

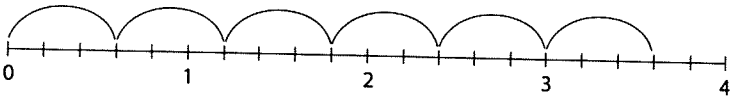
List other mathematical words you need to know.

Unit Review

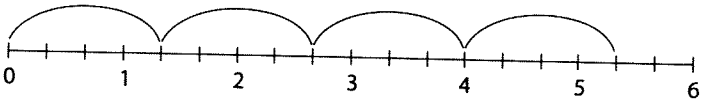
LESSON

3.1 **1.** Write the multiplication sentence represented by each number line.

a) _____

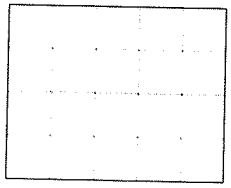


b) _____

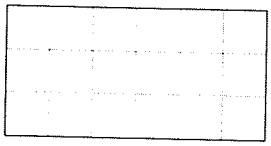


3.2 **2.** Shade each rectangle to show the product.

a) $\frac{3}{4} \times \frac{2}{5}$



b) $\frac{1}{3} \times \frac{5}{6}$



3.3 **3.** Multiply. Estimate to check that the solutions are reasonable.

a) $\frac{3}{4} \times \frac{8}{9} =$ _____

b) $\frac{5}{16} \times \frac{4}{15} =$ _____

c) $\frac{7}{6} \times \frac{8}{21} =$ _____

4. Claude mowed $\frac{1}{4}$ of the lawn before lunch. After lunch he mowed $\frac{2}{3}$ of the uncut lawn. What fraction of the lawn did Claude mow altogether?

Before he started mowing after lunch, Claude had _____ of the lawn left to mow.

Claude mowed _____ of the lawn altogether.

3.4 **5.** Write each mixed number as an improper fraction.

a) $3\frac{3}{5} =$ _____

b) $4\frac{7}{8} =$ _____

c) $1\frac{11}{16} =$ _____

LESSON

6. Multiply.

a) $3\frac{3}{8} \times 3\frac{1}{3} =$ _____ b) $2\frac{2}{5} \times 6\frac{2}{3} =$ _____ c) $1\frac{5}{12} \times 2\frac{5}{8} =$ _____

3.5 **7.** Use a model to determine each quotient.

a) $4 \div \frac{2}{3} =$ _____ b) $5 \div \frac{3}{4} =$ _____ c) $\frac{3}{5} \div \frac{3}{4} =$ _____

3.6 **8.** Divide.

a) $\frac{5}{12} \div \frac{10}{11} =$ _____ b) $\frac{3}{7} \div \frac{9}{14} =$ _____ c) $\frac{3}{5} \div \frac{5}{6} =$ _____

3.7 **9.** Divide. Estimate to check that the quotients are reasonable.

a) $2\frac{1}{4} \div 1\frac{7}{8} =$ _____ b) $1\frac{3}{4} \div 2\frac{4}{5} =$ _____ c) $3\frac{3}{4} \div 2\frac{1}{12} =$ _____

10. A recipe for chocolate cake calls for $1\frac{1}{4}$ cups of chocolate chips. Hasim has $7\frac{1}{2}$ cups of chocolate chips. How many cakes can he make?

Hasim can make _____ cakes.

LESSON

3.8 **11.** On Tuesday, $\frac{5}{12}$ of the grade 8 students attended the computer club meeting and $\frac{3}{8}$ of the grade 8 students attended the science club meeting. The meetings were at the same time. What fraction of the grade 8 students attended one of the meetings? What fraction did not attend either of the meetings?

_____ of the grade 8 students attended one of the meetings.

_____ of the grade 8 students did not attend either of the meetings.

12. Grace has $6\frac{3}{4}$ L of maple syrup that she wants to pour into $\frac{3}{4}$-L containers. How many containers can she fill?

Grace can fill _____ containers.

3.9 **13.** Evaluate.

a) $\frac{3}{5}+\frac{7}{15}\times\frac{9}{14}=$ _____ b) $\left(\frac{3}{5}+\frac{7}{15}\times\frac{9}{14}\right)=$ _____

14. Evaluate: $\frac{4}{7}\times\left(\frac{9}{5}-\frac{3}{4}\right)\div\frac{3}{8}=$ _____

Chapter 5 Review – Percent, Ration and Rate

- ✓ Relating fractions, decimals and percent
- ✓ Calculating percents
- ✓ Solving percent problems
- ✓ Sales tax and discount
- ✓ Exploring ratios
- ✓ Equivalent ratios
- ✓ Comparing ratios
- ✓ Solving ratio problems
- ✓ Comparing rates and unit rates.

Extra practice; text book pages 309-311

In Your Words

Here are some of the important mathematical words of this unit.
Build your own glossary by recording definitions and examples here. The first one is done for you.

discount *the amount that a price is reduced due to a sale*

sales tax

ratio

equivalent ratios

rate

proportion

List other mathematical words you need to know:

Unit Review

LESSON

5.1 **1.** Write each decimal as a fraction and as a percent.

a) $0.15 = \frac{\square}{100} =$ _____

b) $0.4 =$ _____ = _____

c) $0.875 = \frac{\square}{1000} = \frac{\square}{100} =$ _____

d) $0.003 =$ _____ = _____

2. In Carmela's class, 61% of the students are girls, while in Analise's class, 20 out of 32 students are girls. Which class has a greater ratio of girls to students? Explain how you found out.

_____

5.2 **3.** Write each percent as a fraction and as a decimal.

a) 85% = _____ = _____

b) 0.7% = _____ = _____ = _____

c) 139% = _____ = _____

d) 412% = _____ = _____

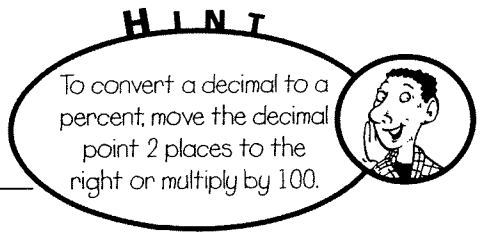
4. Write each fraction as a decimal and as a percent.

a) $\frac{4}{5} =$ _____
= _____

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

c) $\frac{3}{1000} =$ _____
= _____

d) $\frac{15}{6000} =$ _____
= _____



5. In 1895, the population of a small town was 2120.
By 1905, the population increased to 115% of the 1895 figure.

a) What was the population in 1905?

_____

b) Find the increase in population from 1895 to 1905.

_____

LESSON

5.3 **6.** Find the amount in each case.

a) 8% is 56 kg. _____

b) 125% is 85 cm. _____

c) 0.48% is 84 L. _____

7. In a sponsored walk for charity, 560 students participated. Of these, 0.72% completed the 15-km walk. How many students completed this distance?

_____

8. Write each increase or decrease as a percent.

a) The price of gasoline rose from 132.5¢/L to 137.8¢/L.

Percent increase = _____

b) The number of trucks crossing the border fell from 3240 to 2673.

Percent decrease = _____

9. A water tank is filled with 1500 L of water. In 1 h, the tank loses 5.4% of the water due to leakage. What is the volume of water in the tank after 1 h?

_____

5.4 **10.** The tax rate is 12%. Calculate the selling price of each item before and after tax.

a) $125 item at 10% off

Before: _____

After: _____

b) $1820 item at 25% off

Before: _____

After: _____

c) $6.80 item at 15% off

Before: _____

After: _____

11. The sale price of a computer at 15% off is $746.30. What is the regular price?

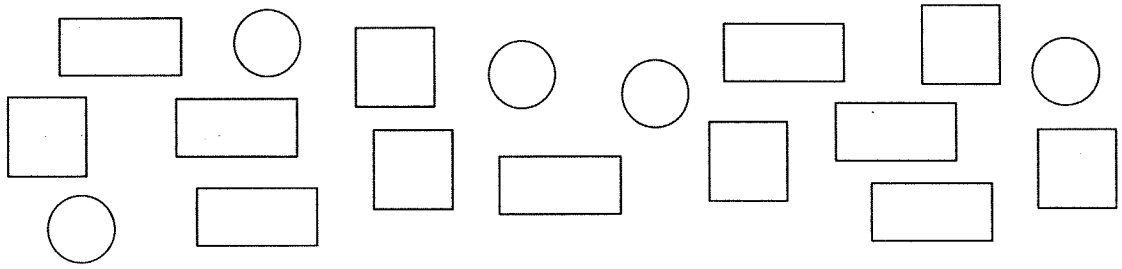
_____

12. A store owner buys coats for $56 each. She adds 30% to the cost and sells the coats at 15% off. Find the selling price of each coat.

_____

LESSON

5.5 **13.** Write each ratio.

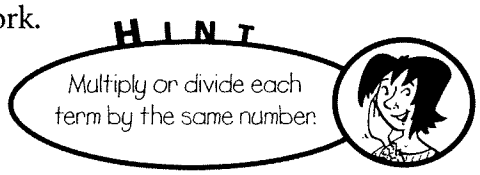


a) squares to circles _____

b) rectangles and circles to squares _____

c) circles to total figures _____

5.6 **14. a)** Write three ratios equivalent to 2:5. Show your work.



2:5 = (2 × ____):(5 × ____) 2:5 = _____ 2:5 = _____

= ____ : ____ = _____ = _____

b) Write three ratios equivalent to 36:18. Show your work.

36:18 = _____

_____

36:18 = _____

_____

36:18 = _____

_____

LESSON

15. Write each ratio in simplest form.

a) 25:15 = (25 ÷ _____):(15 ÷ _____)

= _____ : _____

b) 28:35 = _____

= _____

c) 45:72 = _____

= _____

5.7 **16.** Class 8B has 3 globes for every 7 students.
Class 8D has 2 globes for every 5 students.
Each class has the same number of students.
Which class has more globes? Explain.

Tip
Write each ratio with the same second term.

_____

_____

5.8 **17.** At a summer camp, for every 3 students who sailed, 5 kayaked.
Forty-five students kayaked. How many students sailed?

Let s be the number of students who sailed. Write a proportion.

Tip
Writing the variable as the first term in the ratio makes it easier to solve the proportion.

s: _____ = _____:_____

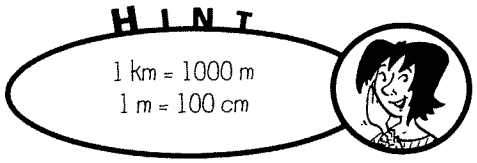
_____ students sailed.

18. In a bag of coloured cubes, the ratio of red cubes to total number of cubes is 5:7.
If there are 105 cubes in the bag, how many cubes are red?

_____ cubes are red.

LESSON

19. The scale of a map is 1:6 000 000.



a) The distance between 2 towns on the map is 8.7 cm. What is the actual distance?

1 cm on the map represents _____ cm of actual distance.

The actual distance between the 2 towns is:

_____ × _____ cm = _____ cm = _____ km

b) The distance between 2 other towns is 1248 km. What is the distance on the map?

_____

5.9 **20.** Express as a unit rate.

a) The van travels 280 km in 4 h.

Tip
Express in kilometres per hour (km/h).

_____

b) Mikki jogs 2 km in 20 min.

_____

5.10 **21.** Which is the better buy?

2.9 L of detergent for $4.56 or 3.8 L for $5.78

_____

22. A cruise ship travelled 84 km in 3.5 h.
At this rate, how long will it take to travel 1050 km?

_____

23. Which country has the greater population density? Write its population density.
The United Kingdom has about 60 million people and an area of 244 800 km^2, and China has about 1806 million people and an area of 9 590 000 km^2.

_____

Chapter 1 Review – Square roots and the Pythagorean Theorem

- ✓ Square numbers and area models
- ✓ Squares and square roots
- ✓ Measuring line segments
- ✓ Estimating square roots
- ✓ The Pythagorean theorem
- ✓ Exploring and applying the Pythagorean theorem

Extra practice: Text book pages 54 -57

In Your Words

Here are some of the important mathematical words of this unit.
Build your own glossary by recording definitions and examples here. The first one is done for you.

perfect square (square number)

the product of a whole number multiplied by itself

For example, 25 is 5 × 5, so 25 is a perfect square.

square root

legs of a right triangle

hypotenuse

Pythagorean Theorem

Pythagorean triple

List other mathematical words you need to know.

Unit Review

LESSON

1.1 **1.** Circle the perfect squares. Use a diagram to support your answer.

a) 36 **b)** 63 **c)** 121 **d)** 99

1.2 **2.** Simplify without using a calculator.

a) $8^2 =$ _____ **b)** $\sqrt{49} =$ _____

c) $12^2 =$ _____ **d)** $\sqrt{121} =$ _____

3. List the factors of each number in ascending order. Circle the numbers that are perfect squares.

a) 50 **b)** 196

_____ _____

c) 84 **d)** 225

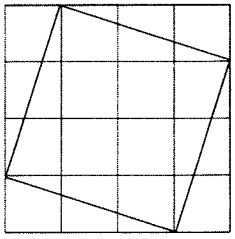
_____ _____

1.3 **4.** The area of a square is given. Find its side length. Circle the side lengths that are whole numbers.

a) 18 cm^2 **b)** 169 cm^2 **c)** 200 cm^2

_____ _____ _____

5. Find the area of the square. Then write the side length of the square.

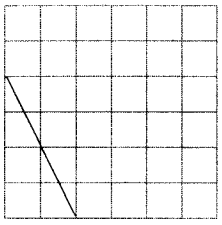


Area = _____

Side length = _____

LESSON

6. Construct a square on the line segment. Find the length of the line segment.



Length = _____

1.4 **7.** Evaluate.

a) $\sqrt{8 \times 8}$ = _____ **b)** $\sqrt{54 \times 54}$ = _____ **c)** $\sqrt{153 \times 153}$ = _____

8. Between which two whole numbers is each square root?

a) $\sqrt{45}$ _____ **b)** $\sqrt{18}$ _____ **c)** $\sqrt{55}$ _____ **d)** $\sqrt{135}$ _____

9. Estimate each root in question 8 to 1 decimal place.

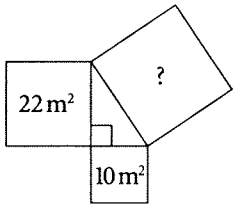
a) _____ **b)** _____ **c)** _____ **d)** _____

10. Circle the better estimate.

a) $\sqrt{75} \doteq 8.65$ or 8.66? **b)** $\sqrt{90} \doteq 9.49$ or 9.50?

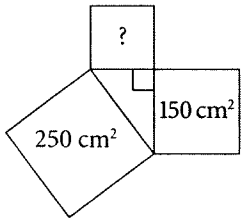
1.5 **11.** Find the area of each indicated square.

a)



_____

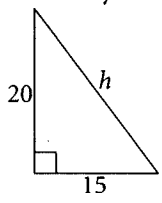
b)



_____

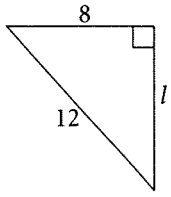
12. Find the length of each side labelled with a variable. Give answers to 1 decimal place, if necessary.

a)



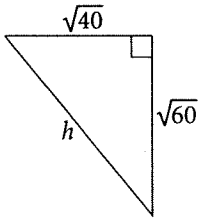
_____

b)



_____

c)



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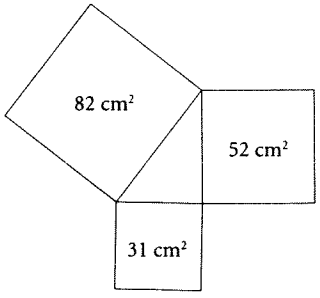
1.6 **13.** Which of the following are right triangles? Justify your answer.

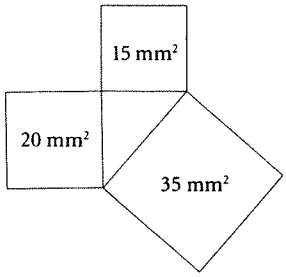
a)



_____

_____

b)



_____

_____

LESSON

14. Circle the sets of numbers that are Pythagorean triples.

a) 10, 24, 26 **b)** 12, 15, 20

c) 7, 24, 26 **d)** 11, 60, 61

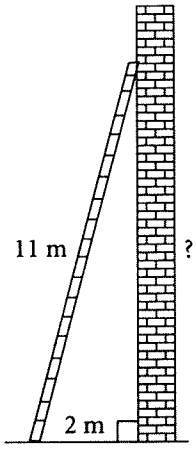
1.7 **15.** A ship travels for 14 km toward the south. It then changes direction and travels for 9 km toward the east. How far does the ship have to travel to return directly to its starting point? Answer correct to 2 decimal places.

Tip

Draw a diagram.

The ship must travel _____

16. How high up the wall does the ladder reach? Answer correct to 2 decimal places.



_____

Chapter 6 Review – Linear Equations and Graphing

- ✓ Solving equations using models
- ✓ Solving equations using Algebra
- ✓ Solving equations involving fractions
- ✓ The Distributive Property
- ✓ Creating a table of values
- ✓ Graphing linear relations

Extra practice: Text book pages 371- 373

In Your Words

Here are some of the important mathematical words of this unit.
Build your own glossary by recording definitions and examples here. The first one is done for you.

distributive property *multiplying a number by a sum of two numbers is the same as multiplying the first number by each number in the sum and then finding the sum of the products*

For example, 5(a + b) = 5a + 5b

opposite operation

algebra tiles

ordered pair

table of values

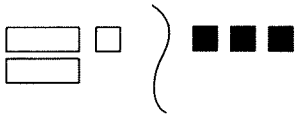
linear relation

List other mathematical words you need to know.

Unit Review

LESSON

6.1 **1.** Write the equation represented by the model. Then solve the equation using the model, showing your steps.



2. Use a model to solve $4 + 3c = -5$.

6.2 **3.** Solve each equation algebraically and verify the result.

a) $4y - 7 = 13$

b) $-9 = 5 + 2m$

LESSON

4. Maria solved the equation $4 - 2p = 6$ using the steps below. Did Maria make an error? YES/NO

If Maria made an error, correct it.

$$4 - 2p = 6$$
$$4 - 4 - 2p = 6 - 4$$
$$-2p = 2$$
$$\frac{-2p}{2} = \frac{2}{2}$$
$$p = 1$$

5. Rajinder collects hockey cards. He currently has 75. He has a plan to collect 12 more each week. After how many weeks will he have a total of 147?

a) Write an equation that you can use to solve this problem.

Let w represent the _____.

_____

b) Solve the equation.

c) Verify your result and write a concluding statement.

_____

6.3 **6.** Solve each of the following equations and verify the results.

a) $\frac{t}{2} = 4$ **b)** $\frac{w}{3} + 4 = -2$ **c)** $6 = 3 + \frac{x}{5}$

_____ _____ _____

6.4 **7.** Expand using the distributive property.

a) $6(v - 3)$ **b)** $-9(3 + p)$ **c)** $-1(-2 + w)$

_____ _____ _____

LESSON

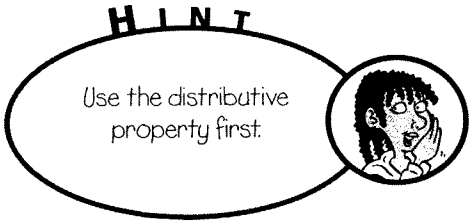
8. Match each expression in Column 1 with an equivalent expression in Column 2.

Column 1	Column 2
a) $3(t-4)$	i) $3t+12$
b) $-3(t+4)$	ii) $-3t-12$
c) $3(t+4)$	iii) $-3t+12$
d) $-3(t-4)$	iv) $3t-12$

6.5 **9.** Solve each equation and verify the results.

a) $5(a-3)=20$

b) $-2(n+3)=-10$



c) $7=4(2+y)$

d) $-2(x+3)=-6$

6.6 **10.** Complete the table of values for each relation.

a) $y=x-4$

x	−2	−1	0	1	2
y					

b) $y=-2x+5$

x	−2	−1	0	1	2
y					

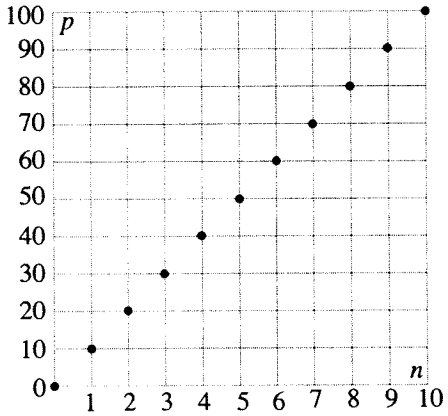
11. The equation of a linear relation is $y=4x-3$. Find the missing number in each ordered pair.

a) (2, _____)

b) (_____, −11)

c) (_____, 13)

12. The graph below represents the relation of the percent score, p, on a math test and the number of questions, n, correct out of 10.
The equation for the relation is $p = 10n$.



a) State the ordered pair that represents the highest score.

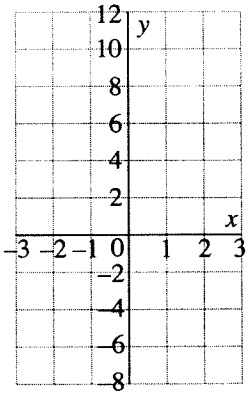
_____

b) Describe the relationship between the variables on the graph.

_____

13. a) Draw a graph of the relation represented by the table of values.

x	y
–2	10
–1	6
0	2
1	–2
2	–6



b) Describe how you know that this is a linear relation.

_____

14. On grid paper, draw the graph of each relation for integer x values from –2 to 2.

a) $y = 2x - 1$

b) $y = 10 - x$

Chapter 4 Review – Measuring Prisms and Cylinders

- ✓ Exploring nets
- ✓ Creating objects from nets
- ✓ Surface area of a right rectangular prism
- ✓ Surface area of a right triangular prism
- ✓ Surface area of a cylinder
- ✓ Volume of a rectangular prism
- ✓ Volume of a right triangular prism
- ✓ Volume of a cylinder

Extra Practice: Text book pages 223- 225

In Your Words

Here are some of the important mathematical words of this unit.
Build your own glossary by recording definitions and examples here. The first one is done for you.

net *a pattern that can be folded to make a solid*

polyhedron

regular prism

regular pyramid

surface area

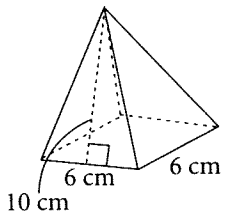
volume

List other mathematical words you need to know.

Unit Review

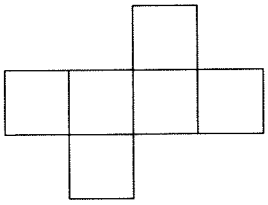
LESSON

4.1 **1.** Sketch a net of the square pyramid.

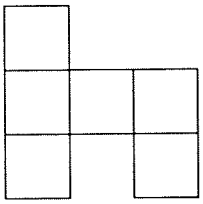


2. Which of the following is **not** the net of a cube?

A



B



C

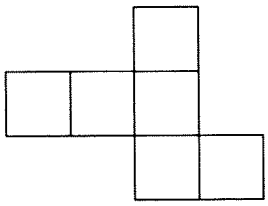
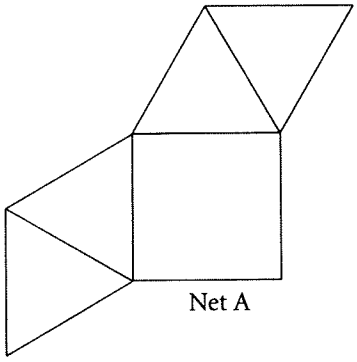
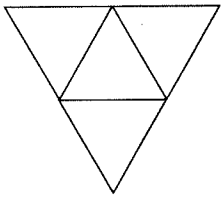


Figure _____ is not the net of a cube.

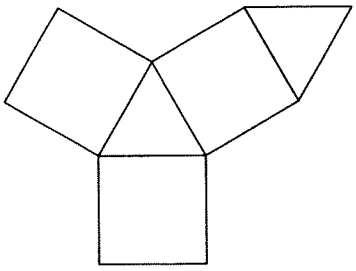
4.2 **3.** Match each net with the corresponding object.



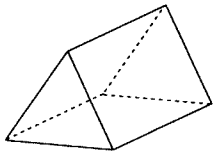
Net A



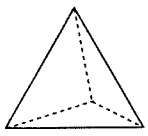
Net B



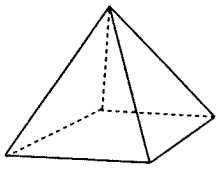
Net C



Object 3



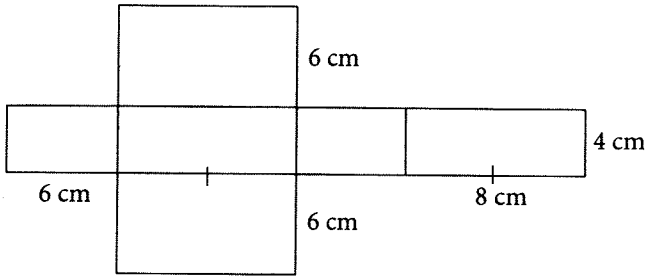
Object 1



Object 2

LESSON

4.3 **4.** Calculate the area of the net of the right rectangular prism.



The area of the net is _____.

4.3 4.5 **5.** A cube has a surface area of 384 cm^2.

a) What is the length of one edge of the cube?

The area of one face of the cube is 384 cm^2 ÷ _____ = _____.

Thus, the length of one edge of the cube is _____.

b) What is the volume of the cube?

The volume of the cube is _____.

6. a) Sketch all possible right rectangular prisms with volume 8 cm^3, where each edge length must be a whole number of centimetres. State the dimensions of each.

Record your results in this table.

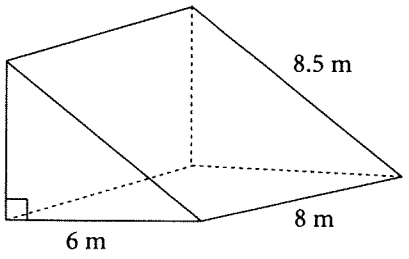
Length	Width	Height	Sketch

b) Calculate the surface area of each prism in the table.

_____, _____, _____

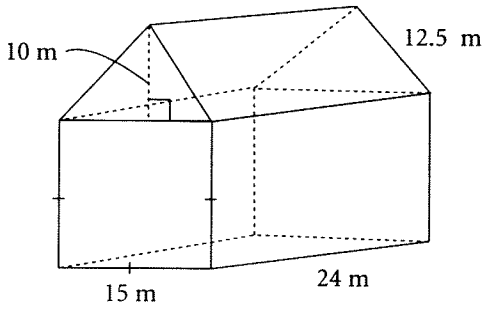
LESSON

4.4 **7.** Calculate the surface area of the prism.



The surface area is _____.

4.5
4.6 **8.** Calculate the volume of the object.

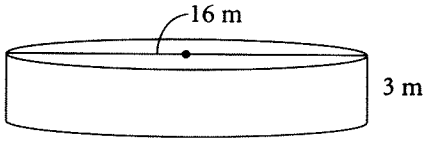


The volume of the triangular prism is _____.

The volume of the rectangular prism is _____.

The total volume is _____.

4.7
4.8 **9.** A cylindrical water tank is open at the top.



a) Calculate the volume of the tank, to the nearest cubic metre.

The diameter is _____, so the radius is _____.

The volume of the tank is _____, to the nearest cubic metre.

b) If the inside of the tank is to be painted, including the floor, what is the area to be painted, to the nearest square metre?

The area to be painted is _____, to the nearest square metre.

Chapter 8 Review – Geometry

- ✓ Sketching views of objects
- ✓ Drawing views of rotated objects
- ✓ Building objects from their views
- ✓ Identifying transformations
- ✓ Identifying transformations in tessellations

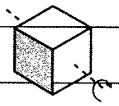
Extra practice: Test book pages 483- 485

In Your Words

Here are some of the important mathematical words of this unit.
Build your own glossary by recording definitions and examples here. The first one is done for you.

axis of rotation *the straight line about which an object or a shape is rotated*

For example, the broken line is an axis of rotation.



isometric drawing

transformation

tessellation

composite shape

conservation of area

List other mathematical words you need to know.