1.1 Modelling Patterns

Checking
1. a) 2 tables 10 chairs; 3 tables 14 chairs
b) 6, 10, 14; 4

Number of tables	1	2	3	4	5	6	7	8	9	10
Number of chairs	6	10	14	18	22	26	30	34	38	42

42 chairs

c) Start at 6 chairs and add 4 chairs.

Practising
3. Step 1: 3 long, 3 round
Step 2: 5 long beads, 4 round beads

Step 3: 2 long beads and 1 round bead

Number of triangles	1	2	3	4	5	6	7	8	9	10
Number of long beads	3	5	7	9	11	13	15	17	19	21
Number of round beads	3	4	5	6	7	8	9	10	11	12

a) 7 triangles
b) 10 triangles

1.2 Extending Increasing Patterns

Checking
1. 1 apple – 25 mL of brown sugar, 10 mL of butter
2 apples – 50 mL of brown sugar, 20 mL butter
3 apples – 75 mL of brown sugar, 30 mL butter

a)

Number of apples	Brown sugar (mL)	Butter (mL)
1	25	10
2	50	20
3	75	30
4	100	40
5	125	50
6	150	60

b) For 5 apples, I need to add 125 mL of brown sugar and 50 mL of butter.
c) Apples: Start at 1 and add 1.
Brown Sugar: Start at 25 mL and add 25 mL.
Butter: Start at 10 mL and add 10 mL

Practising
2. a)

Number of batches	Almonds (mL)	Pumpkin seeds (mL)	Raisins (mL)	Dried apricots (mL)
1	250	125	50	1
2	500	250	100	2
3	750	375	150	3
4	1000	500	200	4
5	1250	625	250	5

b)
Almonds: Start at 250 mL and add 250 mL.
Pumpkin seeds: Start at 125 mL and add 125 mL.
Raisins: Start at 50 mL and add 50 mL
Dried Apricots: Start at 1 handful and add 1 handful

c) No, because they all have a 0 or 5 in the ones column. The almonds are counting by 250's, pumpkin seeds are counting by 125's and raisins are counting by 50's.

1.3 Extending Decreasing Patterns

Checking

1. a) 56 – 49 = ; 49 – 42 = 7; 42 - 35 = 7; 7 each time; 7; The pattern is decreasing by 7 because there are 7 days in the week and Darren showing the pattern of weeks until his grandparent's arrive.

b) Start at 56 and subtract 7.

c) 56, 49, 42, 35, 28, 21, 14, 7, 0
weeks 1 2 3 4 5 6 7 8
8 weeks

Practising

2. a) Start at 75 and subtract 5.

b) 75, 70, 65, 60, 55, 50, 45, 40, 35, 30, 25, 20, 15, 10, 5, 0
cousins 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

15 cousins

3a)

House	House number
1st	196
2nd	192
3rd	188
4th	184
5th	180
6th	176
7th	172
8th	168

b) 168, 164, 160, 156, 152

12th house

1.4 Describing Number Patterns in Games

Step 1: Answers will vary.
Step 2: Answers will vary.
Step 3: Answers will vary.
Step 4: Answers will vary.

1.5 Solving Problems Using Patterns

Checking

2. 100; 3 pairs, 300; 50; 350.

Practising

3. 2; 3; 4
1, 2, 3, 4,…

4; 5; 6 = 13; 13; 12; 6; 6; 13; 6; 13; 6 x 13 = 78

7. 10; 21; 10 x 21 = 210

1.6 Describing Relationships Using Expressions

Checking

1. a) 3; 3
b) 1; 1
c) 7; after; f + 7
d) f + 14

Practising

6. a) J; 3; older; J + 3
A; 3; younger; A − 3
b) J + 3; A – 3; 3; older; 3; younger

1.7 Using Equations to Solve Problems

Checking
1. a) 120; 120 = 305
305-120 = b
185 = b
185 cm

b) taller; g + 95 = 305
305 – 95 = g
210 = g
210 cm

Practising
2. $5; $15

$5 + m = $15
m= $15 − $5
m = $10

4. 16; 6
16 – s = 6
16 – 6 = s
10 = s

5. 14; 32
S – 14 = 32
S = 32 + 14
S = 46

6. p + 4 = 11
p = 11 – 4
p = 7

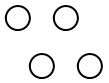
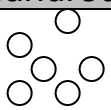
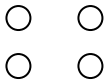
1.8 Creating Problems

Answers will vary.

2.1 Representing Numbers

Checking

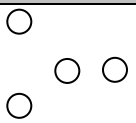
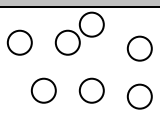
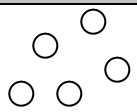
1. a) 0; 4; 6; 4; 2; no;

Thousands			Ones		
Hundreds	Tens	Ones	Hundreds	Tens	Ones
					

b) twenty-four thousand; six hundred; forty; twenty-four thousand six hundred forty

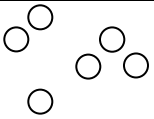
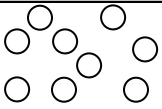
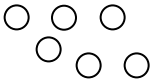
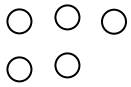
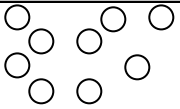
Practising

2. a)

Thousands			Ones		
Hundreds	Tens	Ones	Hundreds	Tens	Ones
					

417 025

b)

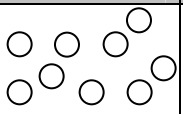
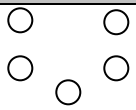
Thousands			Ones		
Hundreds	Tens	Ones	Hundreds	Tens	Ones
					

691 651

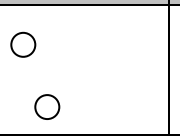
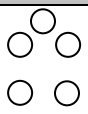
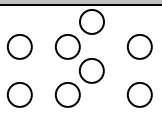
2.2 Using Expanded Form

Checking

1. a)

Thousands			Ones		
Hundreds	Tens	Ones	Hundreds	Tens	Ones
					

103 945

Thousands			Ones		
Hundreds	Tens	Ones	Hundreds	Tens	Ones
					

258 144

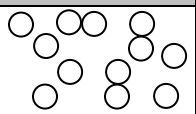
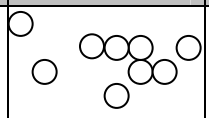
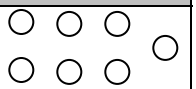
b) Jupiter takes longer because it has more counters in the hundreds column. 200 000 is greater than 100 000.

Practising
2. Answers will vary depending on what number they choose.

2.3 Renaming Numbers

200 000 + 20 000 + 1 000 + 900 + 40 + 7
2; 1; 9; 4; 7; 221 947

947 ones
221; 947
Answers will vary. An example is changing 1 hundred thousand for 10 ten thousands:

Thousands			Ones		
Hundreds	Tens	Ones	Hundreds	Tens	Ones
					

Or using the place value chart and trading 1 ten thousand for 10 thousands, trading 1 hundred for 10 tens, trading 1 ten for 10 ones.

2.4 Rounding Numbers

Checking
1. a) 200 000; 160 000, 162 000
200 000; 160 000, 159 000

b) yes; yes; no

Practising
3. a) B.C. 900 000; 940 000; 945 000
AB 700 000; 660 000, 662 000
SK 700 000; 650 000, 651 000
MN 600 000; 650 000; 648 000

b) Alberta and Saskatchewan
c) Saskatchewan and Manitoba

2.5 Exploring One Million

1 000 000; 25; 250; 2500
Answers will vary.
500; 500
Answers will vary.

2.6 Decimal Place Value

Checking
1. a)

Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
		○		○○○○○○	○○○○○○○

9; 8; 9/100 + 8/1000; 0.90 + 0.08; ninety-eight

b)

Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
		○	○○○○		○

1; 4; 1; 1 + 4/10 + 1/1000; 1 + 0.4; 0.001; one and four hundred one thousandths

Practising
2. a)

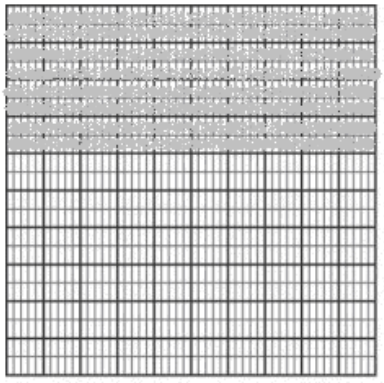
Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
					○ ○○ ○ ○ ○○ ○

b) 8 thousandths or 8/1000 or 0.008
c) eight thousandths

3. a) 6.526
b) 1.205

2.7 Renaming Decimals

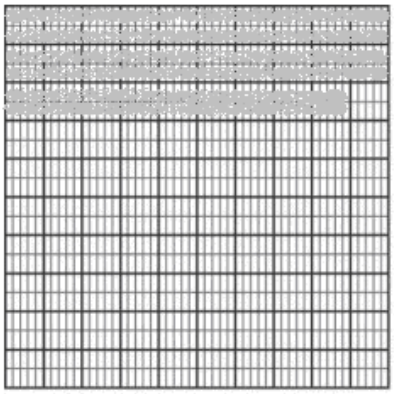
Checking
1. a) 100; 100



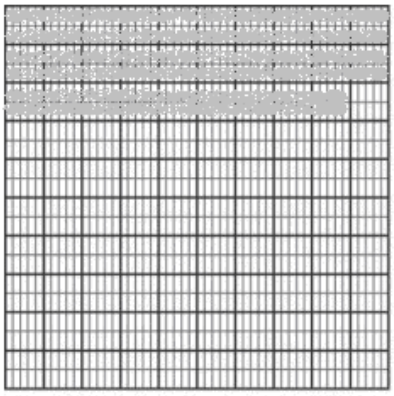
b) 400/1000; 0.400
hundredth 40/100
tenth; 4/10; 0.4

Practising
2. a) 373/1000
b) 0.373

5. a) 2 tenths + 9 hundredths; hundredth; 0.290



b) 0.680



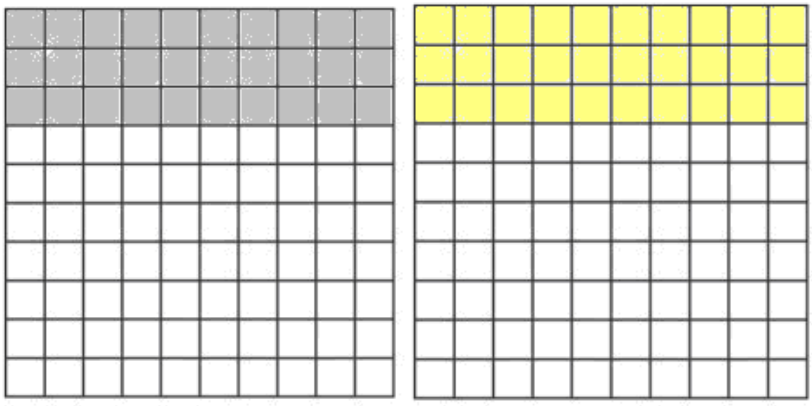
2.8 Communicating about Equivalent Decimals

Checking

1. Yes- model, place value chart, equivalent
2; 20; tenths; equivalent; no

Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
		●		○○○○○○○○○○ ○○○○○○○○○○	
			○ ○		

Practising
2.

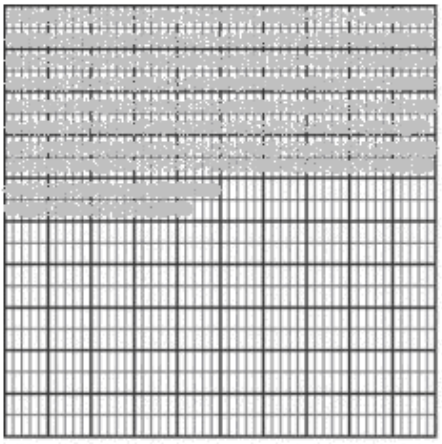


I can model 0.3 and 0.30 on a place value chart. 0.3 is 3 tenths and 0.30 is 30 hundredths. I can regroup 30 hundredths as 3 tenths. So 0.3 and 0.30 are equivalent decimals.

Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
				○○○○○○○○○○ ○○○○○○○○○○ ○○○○○○○○○○	
			○ ○ ○		

2.9 Rounding Decimals

Checking
1. a)



b) 0.45
c) 45
d) 0.4
e) 4
f) 0.29; 0.3

Practising
2. a) 0.16; 0.2
b) 0.23; 0.2
c) 1.07; 1.1
d) 2.04; 2.0

3. No, because 0.324 rounded to the nearest hundredths is 0.32. The only other number that has a 2 in the hundredths column is 0.229 and when rounded to the nearest hundredth it is 0.23. The other two numbers 0.234 and 0.237 have a 3 in the hundredths column.

0.23; 0.24; no; 0.23; 0.234

2.10 Comparing and Ordering Decimals

Checking
1. a) 0.99, 1.02, 1.15, 1.20
b) Erica

Practising
2. 0.1, 0.9, 1.2, 1.6

3.

Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
		0	5	4	8
		0	5	2	1
		0	6	2	1

0.621

First I compared the ones column and there were no ones in all three weights. Then I compared the tenths column and 2 of the salmons had 5 tenths but the last one had 6 tenths. 6 tenths is greater than 5 tenths.

3.1 Estimating Whole-Number Sums and Differences

Checking

1. a) 14 000; 51 000; 14 000 m + 51 000 m = 65 000 m; 65 000
b) 35 000
c) yes; yes; It says the rocket soared another 47 092 m. Since it only needs approximately 35 000 m more to reach 100 000 m it will be well over 100 000 m to win the prize.

Practising

2. a) 6000 + 2000 = 8000
b) 15 000 + 7000 = 22 000
c) 200 000 – 50 000 = 150 000
d) 150 000 – 50 000 = 100 000

6. 11 000; 7000; 11 000 – 7000 = 4000; 4000 m

3.2 Communicating about Estimating and Calculating

Checking

1. I can use estimation to solve this problem because I can easily round the equipment and add it to see if the total is close to the amount of money raised.
2 computers $1600; 2 monitors $700; Printer $200; Cameras $700
$1600 + $700 + $200 + $700 = $3200

Yes, the money raised is approximately $900 + $1200 + $1100 = $3200. Since I rounded most of the items up and not down, she'll have enough money.

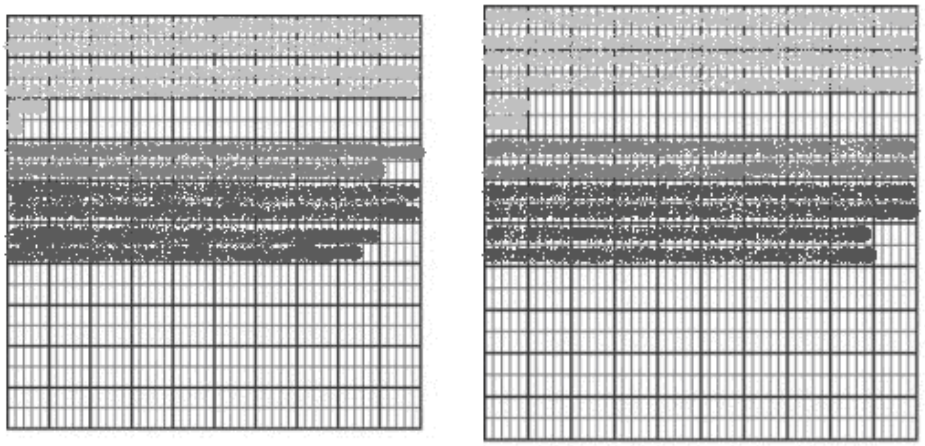
First I rounded the items and found the sum. Next I rounded the money and found the total. I compared the 2 totals and they were the same.

Practising
2. It is easy to round the numbers to see if four will be close to 5000 points.

The watch and the telescope together are about 700 points plus the DVD player (2500) makes a total of 3200 points. 3200 points plus the 1700 points for the zoo is approximately 4900 points. Trevor will be able to trade his reward items for all 4 items because I estimated and the total was less than 5000.

3.3 Estimating Decimal Sums and Differences

Checking
1. a)



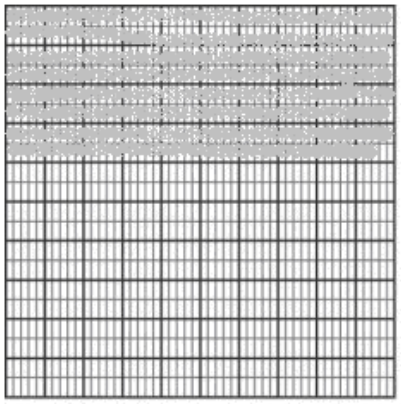
0.210 + 0.100 + 0.190 = 0.500 thousandths

b) 0.500 thousandths

Practising
3. a) 2.80 + 6.30 = 9.10; 9.06
b) 0.70 + 0.32 = 1.02; 1.018
c) 2 – 0.50 + 1.50; 1. 501
d) 23. 70 – 9. 80 = 13.90; 13.921

3.4 Adding Decimals Using Mental Math

Checking
1. a) 0.5 kg; 0.4 kg; 0.08 kg; less
b) Step 1



Step 2: 0.02
Step 3: 0.400- 0.02= 0.398
Step 4: 0.479 – 0.02 = 0.477; 0.477 kg

Practising
2. a) 1.00; 1.77; 1.76
b) 2.00; 2.378; 2.376

3. a)
Step 1: 2 + 1 = 3 km
Step 2: 2.5 + 2 = 4.5 km
Step 3: 3 + 4.5 = 7.5 km
Step 4: 7.501 km

b) It is very close to my estimation.

3.5 Adding Decimals by Regrouping

Checking
1. Step 1: newspapers: 1.70 + 1.90 = 3.60
Flyers: 2.20 + 1.50 = 3.70

Flyers
Step 2: newspapers 3.667 flyers 3.688

Flyers

Yes my answers were reasonable because they came very close to my estimation.

Practising
2. a) 5.32 b) 6.17 c) 1.343 d) 4.338

3. a) Estimation: 38.5 + 38 + 37.20 + 36.90 = 150.6
Actual Total: 150.56
b) I know my answer is reasonable because the total is very close to my estimation.

3.6 Exploring Problems that Involve Decimals

Step 1: 0.001 each
Step 2: 6
Step 3: possible answers

Grey bag	Black bag
1	5
2	4
3	3
4	2
5	1

4, 2

Step 4: 4.01; 2.01

Add 4.01 + 2.01 + 3.998 = 10 kg
When I add the three numbers together the total is 10 kg so I know my answer is correct.

3.7 Subtracting Decimals by Regrouping

Checking
1. a) no; regroup 1 hundredths for 10 thousandths. 8.468
b) 12 – 3.60 = 8.40; yes
c) 8.468

Practising
2. 2.835

4. Step 1: 3.766
Step 2: 5
Step 3: 1.234 km

3.8 Subtracting Decimals by Renaming

Checking
1. Step 3: 0.22; 0.23; 0.23 seconds

Practising
3. a) If you begin on 1000 and subtract 198 on the number line, your answer is 802. If you add 2 to both numbers they are still the same distance apart on the number line and your answer is 802.

b) 10.000; 0.002; 10.002 – 2; 8.002

4. a) 10 km; 10.000; 3.875; 10.000-3.875 = 9.999 (+0.001) – 3.875 = 6.124 (+0.001)= 6.125 km

b) I know my answer is reasonable because I added my answer 6.125 to 3.875 and the answer is 10.000.

c) 10.000 – 7.258 = 9.999 (+0.001) – 7.258 = 2.741 (+0.001) = 2.742 km

4.1 Exploring Types of Data

Step 2: Answers will vary depending on what optical illusion they choose.
Step 3: For example: students in the class, family members, friends

Step 4: What image do you see?
Step 5: For example, make a tally of a duck and rabbit for illusion A and tally the image they see first.
Step 6-8: Answers will vary. The students might say that one image was seen more than another and they may have a summary of their findings for the class.

4.2 Using First-Hand Data

Checking

1. a) snacks they would buy for morning breakfast
Cara asks for one snack and Matthew asks for 2.
Yes, Matthew will have more data because he asked each student for their top two choices instead of just one.

b) Matthew's because there will be more data to know what kinds of snacks to purchase.

Practising

6. Answers will vary depending on their survey question.

4.3 Using Second-Hand Data

Checking

1. a) Answers will vary. For example, Who holds record scores in freestyle skiing?
Who holds record times in downhill skiing?
b) internet, library

Practising

3. a) If I counted myself it would take a very long time.
b) Our school computers hold the registration of all the students. I could ask the secretary how many students there were.

4. Answers will vary. Example: Which Canadian city had the coldest temperature in September? Which Canadian city had the warmest temperature in August?

5. a) Answers will vary. Example: Which waterfall is the tallest in the world?
b) Answers will vary. Example: I can't measure the tallest waterfall myself.
c) Internet or library because they have all these facts and information.
d) Answers will vary.

4.4 Interpreting Double-Bar Graphs

Checking

1. a) What is your favourite winter sport?
b) They both use bars, they have the same sports, they have the same scale, they have both Grade 5 and Grade 6 graphed, they have a legend. One has the bars going vertically and the other horizontally.
c) Snowboarding; Snowboarding is popular for Grade 5 and downhill skiing is the most popular for Grade 6. Those bars were the tallest in that grade.
d) To compare two sets of data. They wanted to see the most popular in two grades so if they only used one bar, you would not be able to see which ones were more popular in Grade 5 than in Grade 6.

Practising

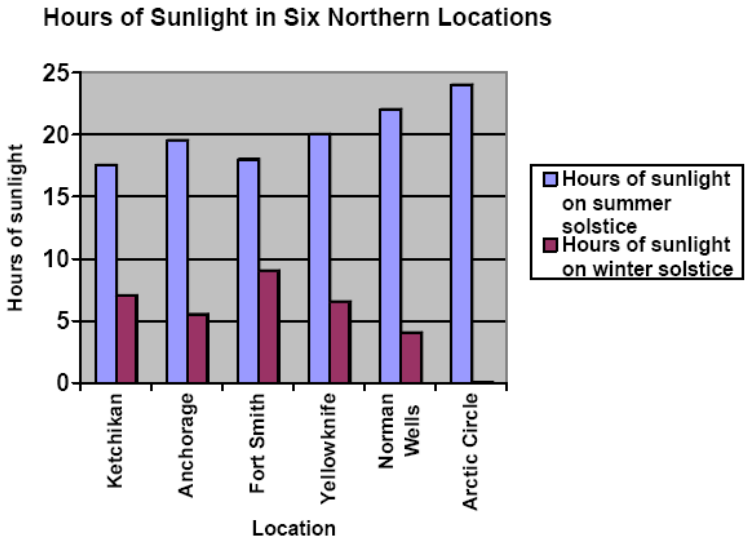
2. Sends more e-mails; about 509; about 1490; e-mails.

5. a) Yes they have the same title, labels and legends.
b) They have different scales. The second graph has a scale of 5 which gives me a more accurate reading of the data.

4.5 Constructing Double-Bar Graphs

Checking

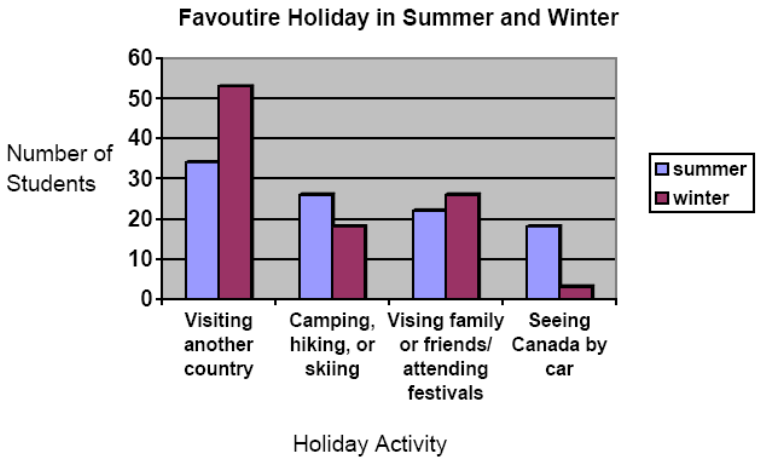
1. a)



b) Hours of Sunlight in Six Northern Locations
Scale = 2
c) Just one because there are no hours on the winter solstice.

Practising

3. a)



b) Answers will vary depending on the data collected.
c) No because there are only 26 students in my class and in their chart there are 26 people who prefer camping, hiking or skiing in the summer.

d) Answers will vary.

4.6 Solving Problems by Creating Diagrams

Checking

1. a) What time of day (morning or afternoon) is the traffic lightest for the Grade 1's to cross the road for their filed trip?
Stand at the traffic light in the morning and the afternoon and take a tally of the amount of cars that cross.
b) Yes because you could compare the height of the bars.

Practising

4. a) populations over the past few years.
b) the internet, books in the library

5.1 Performing Translations

Checking

1. 2, 3

Practising

2. G. Explanations will vary from student to student. For example: It looks exactly like shape F. It's the same size and shape.
3. a-c) check for accuracy of translations.
4. a) Q
b) O

5.2 Exploring Reflections Using a Mirror

Steps 1-4: Designs will vary from student to student.
Step 5: Explanations will vary. For example: I know I made a reflection because both sides look the same. They are the same distance away from the line of reflection.

5.3 Performing Reflections on a Grid

Checking

1. b) Explanations may vary from student to student. For example: The distance of the vertices is the same OR I folded the paper along the line of reflection and both sides matched.

Practising

2. b) Descriptions may vary from student to student. For example: M moved 6 spaces to the right. P moved 4 spaces to the right. N and O stayed the same.
c) No, the orientation is now MPON.

4. c) Descriptions may vary from student to student. For example: The aquarium is on the opposite side of the line of reflection.
d) The labels on the vertices has changed.

5.4 Performing Rotations

Checking

1. c) The location has changed. The orientation and the size is the same.

Practising

2. a) ¼, clockwise (cw)
b) ½, counter clockwise (ccw)

3. c) Explanations may vary from student to student. For example: They are the same size and shape. They are reflections of each other.

5. a) ½ turn, clockwise
b) It does not matter if you change the direction.

5.5 Communicating about Transformations

Descriptions will vary from student to student. The following are examples:

Checking
1. a) The line of reflection is horizontal. Triangle 1 and the dark grey triangle are 1 unit away from the line of reflection.
b) Triangle 2 is a half counter clockwise turn of the dark grey triangle.
c) Move the dark grey triangle two units down and five units to the left to get Triangle 3.

Practising
2. a) I can reflect the dark grey shape upwards.
b) I can translate it 4 units to the right and 1 unit down.

3. I translated shape A one unit to the right and four units down to the dark grey shape.

I reflected shape A to get the light grey shape. Both shapes are two units away from the line of reflection.

I rotated shape A using a ¼ turn clockwise to get the black shape.

6.1 Multiplication Strategies

Checking
1. a) First way: 3; 9, 12, 15, 18, 21; 21
Second way: 9; 12, 15, 18, 21; 21
b) 18; 18, 36; 36
2. 5; 10, 10; 20

Practising
3. a) 30, 30; 30, 36, 42; 42
Alternate strategies may vary. For example:
I know 6 x 6 = 36 so I can add another 6 to get 7 x 6 = 36 + 6 = 42.
b) 15, 15; 30
Alternate strategies may vary. For example:
I know 5 x 5 = 25 so I can add another 5 to get 5 x 6 = 25 + 5 = 30.

8. 7 x 8
For example:
I know 7 x 7 = 49 so I can add 8 to 49 to get 7 x 8 = 49 + 7 = 56.

6.2 Special Products

Checking
1. a) 14; 28, 14 + 14 = 28; 56, 28 + 28 = 56
b) First way: 18; 36, 18 + 18 = 36; 72, 36 + 36 = 72
Second way: 80; 8; 80 – 8 = 72

2. 4 x 9
I know 2 x 9 = 18 so I can double 18 to calculate 4 x 9 = 36.

Practising
Explanations may vary from student to student. For example:

4. a) I know 8 x 4 = 32 so I can double 32 to get 8 x 8 = 32 + 32 = 64; 64
I know 8 x 3 = 24 so I can double 24 to get 8 x 6 = 24 + 24 = 48; 48
8; 6; 64 – 48 = 16

b) 9 x 8; 9 x 4 = 36 so 9 x 8 = 36 + 36 = 72
9 x 6; 9 x 5 = 45 so 9 x 6 = 45 + 9 = 54
8, 6, 72 – 54 = 18

6.3 Relating Multiplication Facts

Answers will vary. For example:
Step 1: 9 x 4
Step 2: 3 x 4
Step 3: 3 x 4 = 12 so I can add 12 3 times to get 9 x 4.
9 x 4 = 12 + 12 + 12 = 36

6.4 Multiplying by Tens, Hundreds, and Thousands

Checking
1. 4; 4, 80; 800; 800
2. a) 7; 140; 1400
b) 3; 21; 2100
c) 1; 6; 6000
d) 2 thousands x 4; 8 thousands; 8000

Practising
4. a) 2, 6; 1200
b) 2, 6; 12000

5. Strategies will vary from student to student. For example:
a) 40 x 80 is 40 x 8 tens = 320 tens = 3200
b) 90 x 90 is 90 x 9 tens = 180 tens = 1800
c) 6 x 2000 is 6 x 2 thousands = 12 thousands = 12000
d) 5 x 700 is 5 x 7 hundreds = 35 hundreds = 3500

6.5 Halving and Doubling to Multiply

Checking
1. a) Step 1: 7; 400
Step 2: 7 x 400 = 2800; 2800
b) 11, 5 x 2 = 10; 5, 11 x 10 = 110; 110

Practising
6. a) 12, 10; 12 x 10, 120
b) 50, 14, 7; 100 x 7 = 700
c) 500, 8, 4; 1000 x 4 = 4000
d) 500 x 2 = 1000; 18/2 = 14; 1000 x 14 = 14000

6.6 Multiplying Numbers Close to Tens

Checking
1. a) 1, 4
b) 400, 400 − 4; 396
2. 800 – 80; 720; 820 – 82; 738
9 x 82 is greater than 9 x 80 because 738 is bigger than 720;
738 – 720 = 18

Practising
3. a) 3; 1, 3; 3
b) 3, 9, 90, 90-3, 87

5. Explanations will vary. For example:
a) 9 x 28 = 10 x 28 = 280 − 28 = 252

b) 9 x 31 is 9 x 28 + 9 x 3 which is 252 + 27 = 279

6.7 Estimating Products

Checking

1. Answers will vary depending on the number of students in your class. For example:
a) 30, 30 x 19, 30, 20, 30 x 20 = 600
b) 450, 600; 30 x 150 = 3 tens x 150 = 450 tens = 4500

Practising

2. a) 50, 30, 800, 50 x 30 = 1500; 800, 1500
b) 40, 30, 600; 40 x 30 = 1200; 600, 1200
c) 40, 70 and 80; 30 x 70 = 2100; 40 x 80 = 3200; 2100, 3200

4. If she estimated low, then she would get 4 x 80 = 320 which would not be enough money to buy the blankets.

6.8 Multiplying Two-Digit Numbers

Strategies will vary from student to student.
Step 1: 1425
Step 2: 25, 25 x 95 = 2375
Step 3: 33, 33 x 95 = 3135

6.9 Multiplying with Base Ten Blocks

Checking

1. 200, 20, 100, 10; 200 + 20 + 100 + 10 = 330; 15 x 22 = 330

Practising

3. a) 6, 2; (10 + 6) x (10 + 2); 100, 10 x 2 = 20, 6 x 10 = 60, 6 x 2 = 12; 100 + 20 + 60 + 12 = 192
b) 8, 20; (10 + 8) x (20 + 2); 10 x 20 = 200, 10 x 2 = 20, 8 x 20 = 160, 8 x 2 = 16; 200 + 20 + 160 + 16 = 376

8. 12 x 14 = (10 + 2) x (10 + 4) = 100 + 40 + 20 + 8 = 168

6.10 Multiplying with Arrays

Checking

1. Top parts: 900, 180
Bottom parts: 180, 36
900+180+180+36=1296; 1296

Practising

2. Parts of the array will vary. For example:
Top parts: 10 x 20 = 200; 10 x 5 = 50
Bottom parts: 8 x 20 = 160; 8 x 5 = 40
200 + 50 + 160 + 40 = 450; 450

5. 40 + 2, 50 + 3; (40 + 2) x (50 + 3); 40 x 50, 40 x 3, 2 x 50, 2 x 3;
2000 + 120 + 100 + 6 = 2226

6.11 Communicating about Multiplication Methods

Checking

Explanations will vary from student to student. For example:
1. He can use arrays to show 17 x 22 is (10 + 7) x (20 + 2).

	10	7
20		
2		

Practising

2. 12, 12 x 14; strategies will vary. For example:
12 x 14 = 10 x 14 + 2 x 14 = 140 + 28 = 168

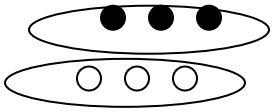
3. 15x600; estimate because I don't need to know the exact answer.
10 x 600 + 5 x 600 = 6000 + 3000 = 9000

4. 47 x 25; calculate the exact answer. Strategies will vary. For example:
(40 + 7) x (20 + 5) = 800 + 200 + 140 + 35 = 1175

7.1 Recognizing and Creating Equivalent Fractions

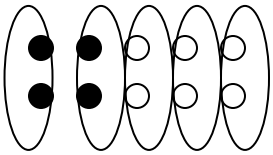
Checking
1. a) 3; 6; 3/6; ½
b) 6; 12; 6/12; 1; 2; ½

Practising
4. a)



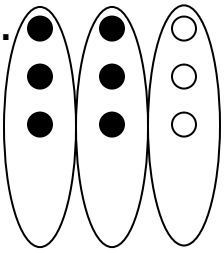
6; 3 and 3; ½

b)



10; 4 and 6; 2/5

5.



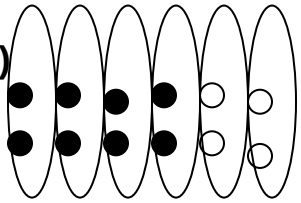
7.2 Using Fractions to Describe Area

Step 1: 4; ¼
Step 2: 2; 8; 1/8
Step 3: 2/4 = 4/8, ¾ = 6/8
Step 4: 4; 16; 1/16
Step 5: 2/4 = 8/16, ¾ = 12/16

7.3 Creating Equivalent Fractions

Checking

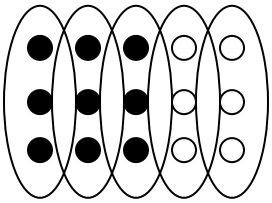
1. a)



Step 4: 6
Step 5: 4
b) 2/2; 4/6; 2, 4; 2, 6

Practising
2. Step 1: 4/5
Step 3: 8; 10; 8/10

3. a)



b) 3/3; 3/5; 3, 3; 3, 5

7.4 Fractions on a Number Line

Checking
1. Step 1: 5
Step 2: 3
Step 3: 9
Step 4: 3
3/5, ¾, 5/6, 9/10

Practising
2. 1/5, ½, 3/5 3/4
3. 1/6, 1/5, ½, 2/3, 5/6

7.5 Comparing Fractions

Checking
1. a) 6/8; 6/8; <
b) 3; 2; >

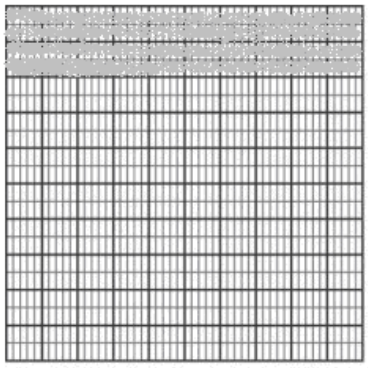
Practising
2. a) < because the denominators are the same and in the numerator 9 is larger than 6.
b) < because the numerators are the same but the denominators are different. When a whole is divided into more pieces the sections are smaller so quarters are larger than fifths.
c) = because when I compared my fraction strips, 4 of the sixths strips was the same length as 6 of the strips in ninths.

3. a) <
b) >

7.6 Using Decimals and Fractions

Checking
1. 750; 750/1000, 0.750

2. a)



b) 2 columns make up 1/5th of the grid.
c) 200/1000 = 0.200; 20/100 0.2; 2/10 0.2; 1/5

Practising
4. a) 0.750
b) 0.500

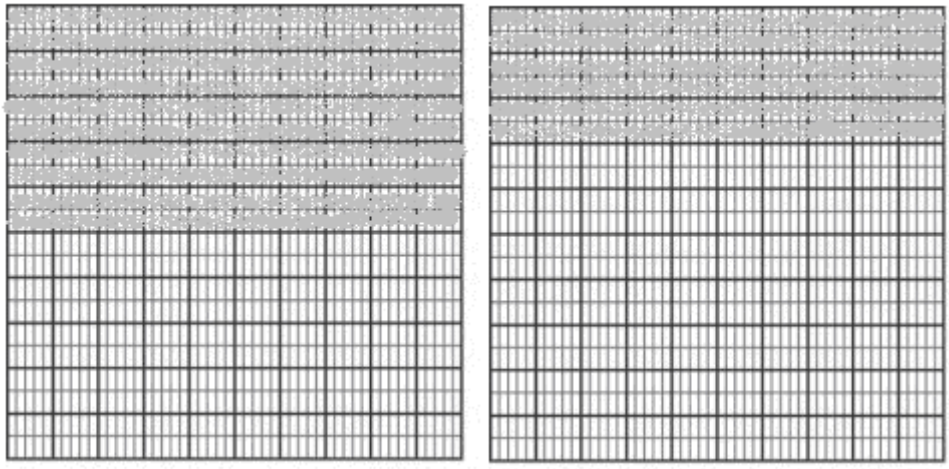
c) 0.4
d) 0.2

7. 0.05; 0.500; No 5/100 is the same as 0.05 but 500/1000 is not the same.

7.7 Using Equivalent Decimals

Checking

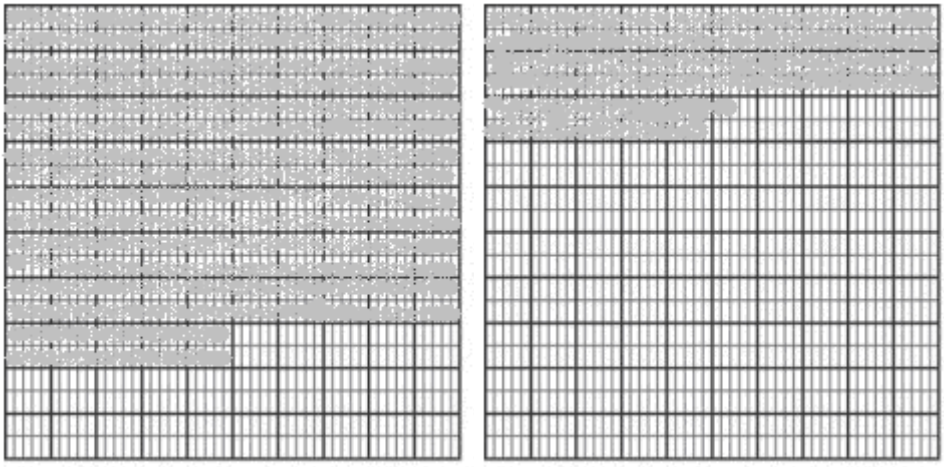
1. 0.5; 50/100 = 0.50; 3/10 = 0.3; 30/100 = 0.30



Last year had the most players because it took up half the grid. This year only had three columns coloured in.

Practising

2. 75/100 = 0.75; 750/1000 = 0.750
253/1000 = 0.253



On the summer holidays because there are 7 tenths in 0.750 and only 2 tenths in 0.253.

3. 585/1000; 0.4; 65/100
0.65, 0.585, 0.4

7.8 Solving Problems Using Logical Reasoning

Checking

1. Step 3: Clue 1: 0.5
Clue 2: 0.1, 0.3, 0.5, 0.7, 0.9
0.7
Clue 3: 0.75

Practising

2. Clue 2: 3; 1 or 2
Clue 3: 6; 9; 6 or 9

Dimes	Quarters	Dollars	Total
4	7	1	12
2	8	2	12
2	9	1	12
3	7	2	12
3	8	1	12
1	9	2	12

8.1 Measuring Length in Millimetres

Checking

1. Lines not to scale.
Vancouver:
Calgary:
Regina:
Iqaluit:

Practising

2. Answers will vary depending on the paper clip used.

3. Answers will vary depending on the math book and eraser used.

4. **a)** 520; longer than my ruler
b) 10, 10, 50, 50 + 1 + 1 = 52; 52 cm
c) Explanations may vary from student from student. For example:
1 m = 100 cm so 0.5 m is 50 cm. 520 mm is 52 cm, which is about 0.5 m.
d) Answers will vary. For example: the width of my desk, the height of my desk etc.

8.2 Estimating Length

Checking

1. a) Explanations will vary. For example: The tree's height is tall so you need a bigger unit to measure it. The width of the tree trunk is measure in cm because it's not really tall or short. The cone's width is measured in mm because it's the smallest object so you need a small unit.
b) Answers will vary. For example:
the height of our classroom, the length of the teacher's desk, the width of my pencil case etc.

Practising

2. a) millimetres
b) Answers will vary. For example: 10 mm
c) 6 mm

4. Answers will vary. For example:
a) My fingernail might be 1 mm because it's really small.
b) My finger might be 1 cm because it's not too small or large.
c) The width of the window might be 1 m because it's much wider than my ruler.

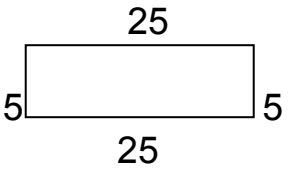
8.3 Exploring Perimeter

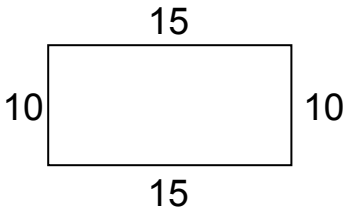
Step 1-3: Answers will vary.
Step 4: As the length becomes smaller, the width becomes bigger.
Step 5: Answers will vary.

8.4 Perimeter and Areas of Rectangles

Checking

1. Answers will vary depending on the rectangles students drew. For example:





Rectangle	Length	Width	Area
1	25 cm	5 cm	125 cm^2
2	15 cm	10 cm	150 cm^2

The rectangle with the greater area is the one with the looks closest to a square.

Practising

3. a)

Length	Width	Perimeter	Area
12 cm	3 cm	30 cm	36 cm^2

b)

Length	Width	Perimeter	Area
10 cm	5 cm	30 cm	50 cm^2

c)

Length	Width	Perimeter	Area
8 cm	7 cm	30 cm	56 cm^2

d) They all have the same perimeter. The 7cm wide and 8cm long rectangle is closest to a square. The area becomes larger as the shape becomes closer to a square.
e) The square has the greater area.

5. a) 6 cm wide, 6 cm long
b) This rectangle has the greatest area because it's a square and squares have the greatest area.

8.5 Measuring and Comparing Volumes

Checking

1. a) Rectangular prisms will vary. For example:
8 cubes in 1 layer, 3 layers, 24 cubes in all; 24 cubes; 8 + 8 + 8 = 24 cubes
b) Answers will vary.

Practising

2. a) 4, 5, 20 cubes
b) 4, 3, 12 cubes
c) 8, 2, 16 cubes

4. a) Answers will vary. For example:
Prism 1: 6, 6
Prism 2: 3, 12
b) Prism 1: 10, 3
Prism 2: 6, 5

8.6 Measuring Volume in Cubic Centimetres

Checking

1. a) Estimates will vary. 30 cm^3
b) 42; 42 cm^3

Practising

3. First way: 6, 2, 12, 12 cm^3
Second way: 4, 3, 12, 12 cm^3
6. a-b) Rectangular prisms will vary.
Both prisms have a volume of 20 cm^3 but the shapes of the prism are different.

8.7 Measuring Volume in Cubic Metres

Checking

1. 100, 10, 1000; Explanations will vary. For example: Each layer is 100 large base ten cubes. There are 10 layers so 100 x 10 = 1000.

2. 2 m^3 might be the volume. The minivan would fit inside the 20 m^3 and 200 m^3 but they're too big.

Practising
3. Explanations will vary from student to student.
a) Cubic centimetres because cubic metres is way too big for a jewellery box.
b) The cubic metre is too big to measure a large base ten cube.

6. a) 1 cm^3
b) 1 m^3
c) 3 cm^3

8.8 Exploring Litres and Millimetres

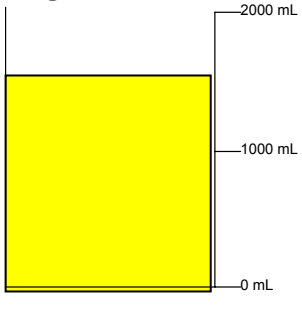
Step 1-5: Answers will vary.
Step 6: 1000 mL

8.9 Estimating and Measuring Capacity

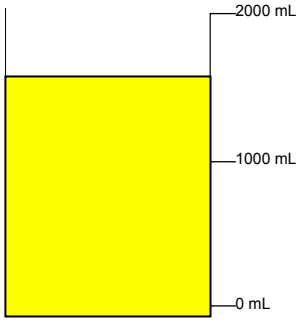
Checking
1. a) litres
b) millimetres
c) litres
d) millitres

2. Answers will vary. 50mL because I don't put a lot of milk in my cereal.

Practising
5. a)



b)



c) Answers will vary depending on the glass used. For example: 250mL, 8 ; My estimate was close to the actual results.

6. a-c) Answers will vary depending on the containers chosen.

8.10 Solve Problems Using a Chart

Checking
1.

	2 L	4 L	16 L	Total
Using 1 pail	√			2 L
		√		4 L
			√	16 L
Using 2 pails	√	√		2 L + 4 L = 6 L
		√	√	4 L + 16 L = 20 L
	√		√	2 L + 16 L = 18 L
Using 3 pails	√	√	√	2 L + 4 L + 16 L = 22 L

7 different amounts

Practising
2.

	50 mL	100 mL	150 mL	Total
1 scoop	√			50 mL
		√		100 mL
			√	150 mL
2 scoops	√	√		50 mL + 100 mL = 150 mL
		√	√	100 mL + 150 mL = 250 mL
	√		√	50 mL + 150 mL = 200 mL
3 scoops	√	√	√	50 mL + 100 mL + 150 mL = 300 mL

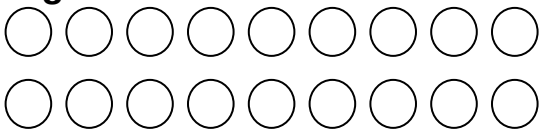
50mL, 100 mL, 150 mL, 250 mL, 200 mL, 300 mL

9.1 Division Fact Strategies

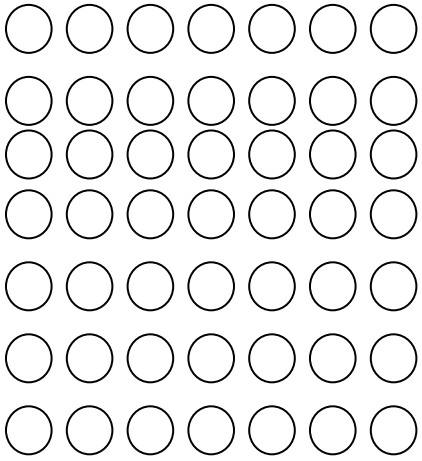
Checking
1. a) 6 x 6; 6 players
b) 9 x 4; 9 or 4 players
c) Explanations will vary. For example:

There are no other players that can Desmond's game because there's no other way of making 36 with numbers less than 10.

Practising

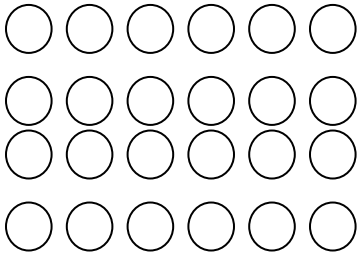
3. a) 

9, 9

b) 

7, 7

c) 24



6

d) 42, 6, 7
e) 5
f) 7

9.2 Dividing by Halving

Checking
1. two, 12, 6, 6, 6

Practising
2. a) 2, three, 32, 32, 16, 32, 8, 16, 8, 8
b) 2, two, 16, 16, 8, 8
c) 2 x 2, three, 36, 36, 18, 18, 9, 9
d) 2 x 2 x 2, three, 24, 24, 12, 12, 6, 6

9.3 Dividing Tens and Hundreds

Checking
1. 35, 35, 7, 7, 70

2. a) 24, 24, 3, 30, 30
b) 8, 2, 200, 200
c) 56, 56, 8, 8, 80, 80
d) 81, 81, 9, 9, 90, 90

Practising
6. 28, 4, 4, 40

9.4 Estimating Quotients

Checking
1. a) 280, 278 is very close to 280 so it's a good estimate.
b) 280, 28, 28, 7, 7, 70, 70

Practising
2. 130, 13, 5 pods have 10 dolphins, 4 pods have 20 dolphins each.
Explanations will vary. For example:
I shared the tens blocks in the 9 groups. That used up 9 blocks and left 4 blocks. I divided that between 4 groups.

9.5 Exploring Division with Greater Numbers

Answers will vary. For example:
4 hamburgers, 4, 456 ÷ 2 = 228 ÷ 2 = 114, 114 g
4 drinks, 4, 820 ÷ 2 = 410 ÷ 2 = 205, 205mL

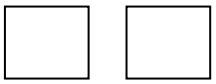
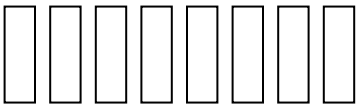
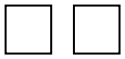
9.6 Using Subtraction to Divide

Checking
1. 262, 182, 102, 22; 22; 2; 6; There are 10 + 10 + 10 + 10 + 2 = 42 teams of 8; 6

Practising
7. Explanations and repeated subtraction amounts may vary. For example:
a) 60; 197 − 60 = 137 – 60 = 77 – 60 = 17 – 6 = 11 – 6 = 5; 32 weeks with 5 extra days
b) 5 x 10 = 50; 197 – 50 = 147 – 50 = 97 – 50 = 47 – 25 = 22 – 20 = 2; 10 + 10 + 10 + 5 + 4 = 39 weeks with 2 extra days

9.7 Dividing by Sharing

Checking
1. a)

Hundreds	Tens	Ones
		

No, 28, no, yes, 7 tens 0 ones; 70 minutes
b) Yes, 2. There were 2 minutes left over because I couldn't share it in 4 equal groups.

Practising
7. a) 32, 32, 4, 40, 40; 15, 15, 5, 50, 50
b) Madeline: 30, 3, 7, 78, 9 with 6 leftover, 39 with 6cookies left over
Jill: 10, 5, no, 2, 2, 50 with 2 cookies leftover

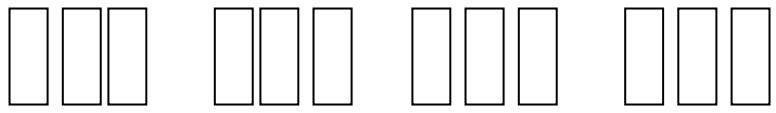
9.8 Describing Remainders as Decimals

Checking
1. a) 15, 15, 5, 50, 50
b) 29, 3, 30, 6, 60 ¢, 0, $29, 60 ¢, $29.60

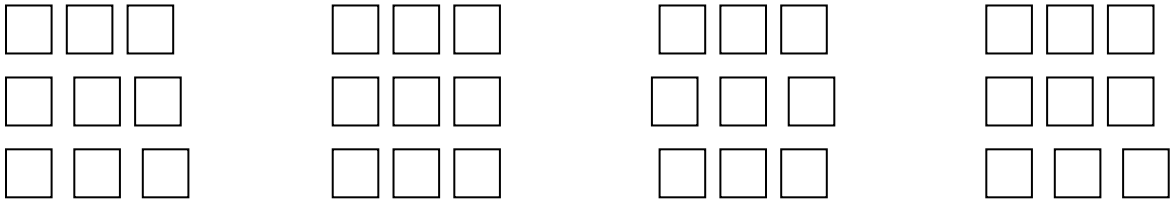
Practising
3. Explanations will vary.
a) The remaining dollar can be divided.
b) 7, 1, 1 dime, 4 pennies; 2 pennies left over; $7, 14 ¢, $7.14

9.9 Interpreting Remainders

Checking
1. a) no, 10



3, 38



2, 3, 9; 39; 2
b) No, you can't leave them out of the album. You need another page for the remaining photos.
40 pages

Practising
5. Strategies will vary from student to student.
a) 518 ÷ 4 = 129 R 2. There will be 2 pieces of wood left over.
b) 157 ÷ 6 = 26 R 1. 1 cupcake can't be leftover so Jesse needs 27 packages.
c) 225 ÷ 3 = $75

9.10 Solve Problems by Guessing and Testing

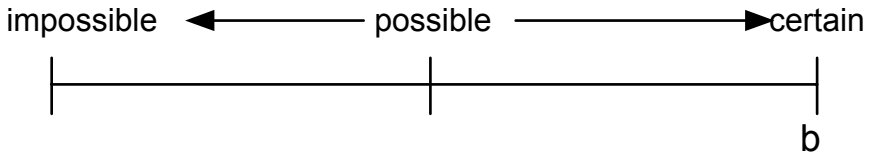
Checking
Explanations will vary. These are examples.
1. a) 12, 2, 2, 20; Each box has the same amount of MP3 players.
b) 12, 12, 3, 3, 30. Yes, there could be 4 boxes because each box has the same amount.

Third guess will vary.

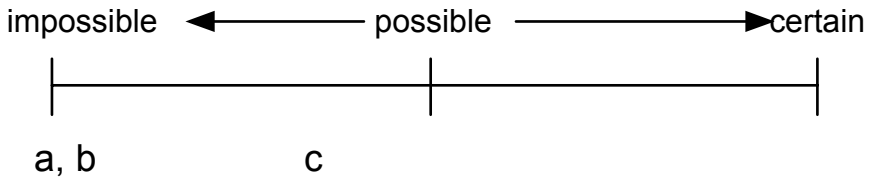
Practising
2. Guesses will vary along with the amount raised. For example:
6 classes; 486 ÷ 6 = $81
7 classes; 486 ÷ 7 = $69.42 with 6¢ leftover. There are not 7 classes at Ash's school.

10.1 Probability Lines

Checking
1. Answers may vary from student to student.
b)



Practising
2.



3. a) possible
b) certain
c) impossible to possible
d) possible

10.2 Conducting Spinner Experiments

Checking
1. a) Results will vary from student to student.
b) 6-7 times (based on 1/3 of 20)
c) Results will vary from student to student. For example:
My prediction was close to my results.

Practising
Results and explanations will vary from student to student. For example:
3. a) The probability of spinning a number less than 9 almost certain because all the numbers are less than 9.
b) The probability of spinning a number less than 9 certain because all the numbers are less than 9.
c) The probability of spinning an odd number is impossible because there are no odd numbers on the spinner.

10.3 Conducting Experiments with a Die

Results from each experiment may vary from student to student. These are examples:

Checking
1. a) 2
b) 4. The chance of getting a 2 is 1 out of 6 on a dice because there are 6 numbers. 6 x 4 = 24 so there's 4 chances out of 24 to roll a 2.
c) 4. My results and prediction was the same.

Practising
4. 1, 2, 3, 4, 5, 6; It's likely to roll a 2 because all the numbers are the same.
5. a) Examples will vary from student to student. For example: It's impossible to roll a 7.
b) Examples will vary from student to student. For example: It's certain to roll a 1.

6. Experiments will vary from student to student.

10.4 Comparing Probabilities

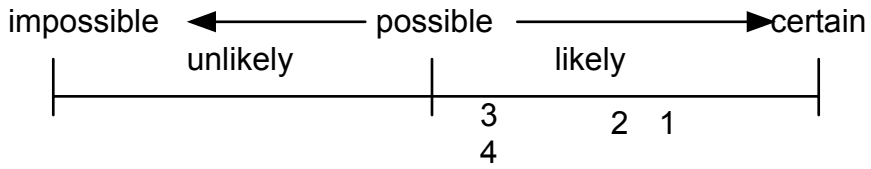
Checking

Results will vary from student to student. These examples are based on theoretical probability.

1. a) 1 ticket (7), 2 tickets (3), 3 tickets (1), 4 tickets (1)
b) 2 tickets
c) 3 tickets or 4 tickets because they have the least amount of space on the spinner.

Practising

2. a) 1 because it takes up the most amount of space on the spinner.
b) 1 takes up more space than 3 on the spinner.
c) Results will vary. My results are close to my prediction.
d) 1: likely
2: likely
3: possible
4: possible



10.5 Solving Problems by Conducting Experiments

Checking

1. Choice of coins may vary. For example:
2 dimes, 1 nickel, 1 penny; I'm more likely to take out a dime than a penny because there's 2 dimes and only 1 penny; dime; my results and prediction are the same.

Practising

2. Results will vary. The results show that yellow was taken out the most so the bag with the most yellow tiles is the bag Ami used. This is bag B.

10.6 Designing Spinners

Choice of cards and spinner designs will vary from student to student.

11.1 Vertical and Horizontal Lines and Faces

Checking

1. a) The horizontal faces are the faces of the drawer. The horizontal edges are the edges formed by the bottom and top of the drawers.
b) Vertical faces are the side of the drawer, faces of the drawers moving downwards. The vertical edges are the sides of the dressers and the separation between the drawers.

Practising

2. a) The horizontal faces are now vertical because you flipped the dresser to it's side.
b) The vertical faces are now horizontal because the dresser is now on it's side.
3. Pictures will vary from student to student.
4. Objects will vary from student to student.

11.2 Parallel, Intersecting, and Perpendicular Lines and Faces

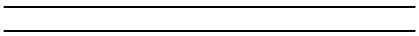
Checking

1. Colouring will vary.

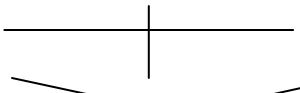
Practising

2. Drawings will vary. For example:

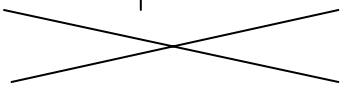
a)



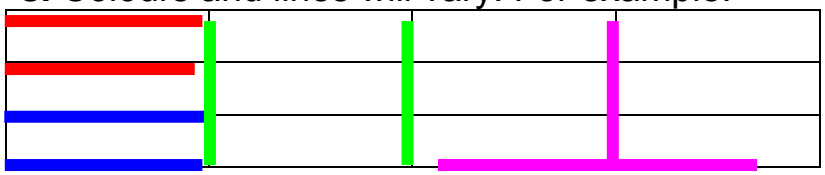
b)



c)



3. Colours and lines will vary. For example:



Blue – horizontal
Green – vertical
Red – parallel
Pink – perpendicular
There are no intersecting lines because all the lines form a square when they cross.

8. Colourings will vary.

11.3 Finding Lines and Faces in the Media

Examples will vary from student to student.

11.4 Sorting Quadrilaterals

Checking
1. Attributes chosen will vary from student to student.

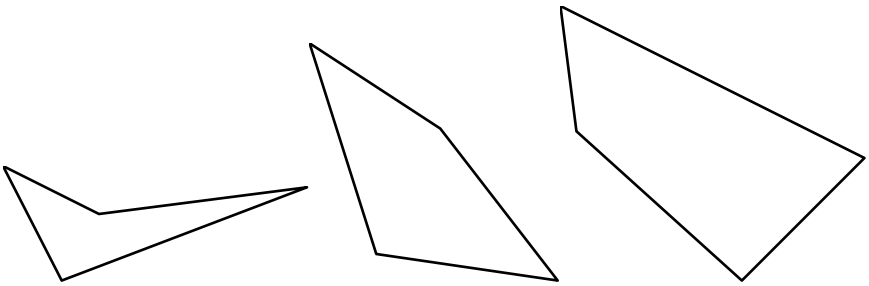
Practising
2. b) They all have 1 set of parallel sides, 1 pair of perpendicular sides, and square corners (90° angle).
c) They don't have a set of perpendicular sides.
d) They have a set of parallel sides. Parallel Sides.
They have a set of perpendicular sides. Perpendicular Sides.

7. Some answers will vary depending on the criteria. For example:
a) square, rectangle
b) rectangle, square
c) trapezoid
d) rectangle
e) square
f) rectangle

11.5 Solving Problems by Drawing Diagrams

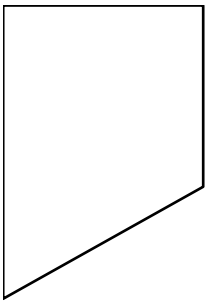
Checking

1. Understand the problem: 4 sides, 0 parallel sides
Carry out the plan: shapes will vary. For example:



Practising

2. Understand the Problem: 4 sides, 0 equal sides, 1 parallel sides
Possible shapes will vary. For example:



3. a) Quadrilaterals and riddles will vary from student to student.