

# 1.1 Patterns in an Addition Table

## Checking

1. Step 1: 2, 2, add 2 each time. 14, 16

Step 2: 2, 2, add 2 each time. 10, 12

Step 3:

+	2	4	6	8	10	12	14
2	4	6	8	10	12	14	16
4	6	8	10	12	14	16	18
6	8	10	12	14	16	18	20
8	10	12	14	16	18	20	22
10	12	14	16	18	20	22	24
12	14	16	18	20	22	24	26
14	16	18	20	22	24	26	28

## Practising

2. Step 1: Explanations will vary. *Start with 3 and increases by 2 each time.*

Step 2: Explanations will vary. *Start with 3 and increases by 2 each time.*

Step 3:

+	2	4	6	8	10	12	14
1	3	5	7	9	11	13	15
3	5	7	9	11	13	15	17
5	7	9	11	13	15	17	19
7	9	11	13	15	17	19	21
9	11	13	15	17	19	21	23
11	13	15	17	19	21	23	25
13	15	17	19	21	23	25	27

## 1.2 Extending Patterns in Tables

### Checking

1. a) 12, 18, 6, 12, 18

Large Inuksuk Rocks	
Number of Inuksuit	Total number of large rocks
1	6
2	12
3	18
4	24
5	30
6	36

No, because she needs 36 large rocks to make 6 inuksuit.

b) Explanations will vary. *The pattern starts with 6 and increases by 6 each time.*

### Practising

3. a)

Shape squares	
Shape number	Number of squares in the shape
1	5
2	9
3	13
4	17
5	21
6	25

25

b) Explanations will vary. *The pattern starts at 5 and increases by 4 each time.*

## 1.3 Representing Patterns

### Checking

1. a)



(frame 3)



(frame 4)

b) 3

c) Explanations will vary. *Yes, because if I continue the pattern, 6 frames will need 19 sticks. 20 is more than 19.*

### Practising

4. a) Explanations will vary. *She made a 6-sided frame instead of all 5-sided frames. She added 6 to 15 instead of 5 in her table.*

b) Answers will vary. *The model is easier because it's easy to see mistakes in pictures.*

## 1.4 Solving Problems Using Patterns

### Checking

1. Steps 1-2

Explanations will vary. *Clowns that have a hat start at 5 and increases by 5 each time. Clowns that have a red nose start at 2 and increases by 2 each time.*

1	<del>2</del>	3	<del>4</del>	<del>5</del>	<del>6</del>	7	<del>8</del>	9	<del>10</del>
11	<del>12</del>	13	<del>14</del>	<del>15</del>	<del>16</del>	17	<del>18</del>	19	<del>20</del>
21	<del>22</del>	23	<del>24</del>	<del>25</del>	<del>26</del>	27	<del>28</del>	29	<del>30</del>
31	<del>32</del>	33	<del>34</del>	<del>35</del>	<del>36</del>	37	<del>38</del>	39	<del>40</del>
41	<del>42</del>	43	<del>44</del>	<del>45</del>	<del>46</del>	47	<del>48</del>	49	<del>50</del>
51	<del>52</del>	53	<del>54</del>	<del>55</del>	<del>56</del>	57	<del>58</del>	59	<del>60</del>
61	<del>62</del>	63	<del>64</del>	<del>65</del>	<del>66</del>	67	<del>68</del>	69	<del>70</del>
71	<del>72</del>	73	<del>74</del>	<del>75</del>	<del>76</del>	77	<del>78</del>	79	<del>80</del>
81	<del>82</del>	83	<del>84</del>	<del>85</del>	<del>86</del>	87	<del>88</del>	89	<del>90</del>
91	<del>92</del>	93	<del>94</del>	<del>95</del>	<del>96</del>	97	<del>98</del>	99	<del>100</del>

10 clowns wear a hat and have a red nose.

### Practising

1	<del>2</del>	<del>3</del>	<del>4</del>	5	<del>6</del>	7	<del>8</del>	9	<del>10</del>
11	<del>12</del>	13	<del>14</del>	<del>15</del>	<del>16</del>	17	<del>18</del>	19	<del>20</del>
<del>21</del>	<del>22</del>	23	<del>24</del>	<del>25</del>	<del>26</del>	27	<del>28</del>	29	<del>30</del>
31	<del>32</del>	<del>33</del>	<del>34</del>	35	<del>36</del>	37	<del>38</del>	39	<del>40</del>
41	<del>42</del>	43	<del>44</del>	<del>45</del>	<del>46</del>	47	<del>48</del>	49	<del>50</del>
<del>51</del>	<del>52</del>	53	<del>54</del>	<del>55</del>	<del>56</del>	57	<del>58</del>	59	<del>60</del>
61	<del>62</del>	<del>63</del>	<del>64</del>	65	<del>66</del>	67	<del>68</del>	69	<del>70</del>
71	<del>72</del>	73	<del>74</del>	<del>75</del>	<del>76</del>	77	<del>78</del>	79	<del>80</del>
<del>81</del>	<del>82</del>	83	<del>84</del>	<del>85</del>	<del>86</del>	87	<del>88</del>	89	<del>90</del>
91	<del>92</del>	<del>93</del>	<del>94</del>	95	<del>96</del>	97	<del>98</del>	99	<del>100</del>

2. a) 6 clowns have glasses and a hat.
- b) 3 clowns have glasses, a hat, and a red nose.
3. 2. If you count by 3 and 4, you land on 12 and 24.

## 1.5 Solving Equations

### Checking

1. Models will vary depending on the blocks student use.

a)  $77 = 73 + \square$

b) Models will vary depending on the blocks student use.

4

### Practising

2. Explanation will vary. *The pattern starts at 52 and decreases by 7 each time.*

a)  $52 - \square = 45$  or  $45 + \square = 52$

b) Number lines will vary depending on whether students used addition or subtraction.

7

5. a) 9

b) 16

c) 44

d) 9

e) 16

f) 16

## 1.6 Solving Problems with Equations

### Checking

1. He needs to add to get to 250

a)  $118 + \square = 250$

b) Models will vary from student to student.

132

### Practising

4. Step 1:  $75 - \square = 36$

Step 2: Models will vary from student to student.

39

## 1.7 Equations in a Story

Answers will vary from student to student. Check to make sure the story they have written matches the equations.



## 2.3 Expanded Form

### Checking

1. a) four thousand five hundred sixty seven
- b) 4 thousands, 5 hundreds, 6 tens, 7 ones
- c) 4 thousands + 5 hundreds + 6 tens + 7 ones
- d)  $4000 + 500 + 60 + 7$

### Practising

2. a) 8 thousands + 0 hundreds + 1 tens + 7 ones
- b) 8017
5. a) 6 thousands, 6 tens, 6 ones, 666
- b) 1 thousand, 2 hundreds, 1 ten, 1210

## 2.4 Describing 10 000

Answers will vary from student to student.

## 2.5 Writing Number Words

### Checking

1. a) 9 thousands + 9 hundreds + 9 tens + 5 ones, cheque details will vary
- b) 3 thousands + 9 hundreds + 5 tens, cheque details will vary

### Practising

3. a) 1 thousands, 5 hundreds, cheque details will vary
- b) 1 thousands, 5 ones, cheque details will vary

## 2.6 Locating Numbers on a Number Line

### Checking

1. a) Explanations will vary. *1872 is closest to 1870 because they're right next to each other on the number line.*

Explanations will vary. *1952 is closest to 1960 because they're close to each other on the number line.*

Explanations will vary. *I placed 1908 before 1910 because 8 is almost 10.*

### Practising

2. a) 3875, 4000, 4050

b) 3450, 4050, 4775

5. a) Explanations will vary. *The number line is counting by 10 so 1430 should come after 1420, not 1440.*

b) Explanations will vary. *The number line is counting by 1000 so it should start with 2000, not 2900.*

b) Explanations will vary. *The number line is counting by 500 so 5500 should be after 5000, not 6000.*

## 2.7 Comparing and Ordering Numbers

### Checking

1. 2473 is closer to 2500. 5117 is closer to 5000. 5117 is greater.

### Practising

2. a) 1281, >

b) 2942, <

4. a) car bumper stickers. For example: *It has the fewest number of items because it has the least amount of thousands, hundreds, and tens.*

b) pencils. For example: *It has the most items because it has the most thousands of all the other numbers.*



## 2.8 Communicating about Ordering Numbers

### Checking

1. Suggestions will vary from student to student. For example: *He could explain why he switched 86 and 865. He could explain why he placed 1000 in the middle.*

### Practising

2. a) 3869, 3867, 473, 450, 392

b) Explanations will vary. For example: *I looked at the thousands first. Two numbers had the same number of thousands so I looked at the hundreds next. 3869 and 3867 have the same number of hundreds so then I looked at the tens. 3869 has the most number of tens so it's the greatest number. 3867 is the next greatest. 473 and 450 have the same number of hundreds so I looked at the tens. 473 has the most number of tens so 473 is bigger than 450. 392 is the least number because it has 0 thousands and the least amount of hundreds.*

c) Answers will vary.

## 3.1 Solving Problems by Estimating

### Checking

1. Step 1: An estimate because I don't need to know the exact number of pages she wrote.

Step 2: 2 hundreds, 7 tens, 5 ones

2 hundreds, 5 tens

Yes, because I counted the hundreds and there is 5.

### Practising

4. Step 1: An estimate because I don't need to know an exact number.

Step 2: 5 hundreds, 7 tens, 5 ones + 2 hundreds, 7 tens, 5 ones

Yes, the school has enough money. I traded 10 tens for 1 hundreds and 10 ones for 1 tens. Together there is 8 hundreds + 5 tens + 0 ones which is more than \$800.

## 3.2 Estimating Sums

### Checking

1.

Number	Thousands	Hundreds	Tens	Ones
400	0	4	0	0
1290	1	2	9	0
450	0	4	5	0
1200	1	2	0	0

$1 + 1 = 2$ , 2 m

Answers will vary.

### Practising

2. a) 567 is closest to 600. 513 is closest to 500. 1100

4. 900, 1800, 2400,  $900 + 1800 + 2400 = 5100$ , 5100

### 3.3 Exploring Addition and Subtraction

Step 1:  $1000 - 200 = 800$

Step 2:  $800 - 300 = 500$

Step 3:  $500 + 2 = 502$

Strategies will vary from student to student.

### 3.4 Adding from Left to Right

#### Checking

1. Step 1 & 2:

Mass		Thousands	Hundreds	Tens	Ones
2455		2	4	5	5
849		0	8	4	9
4567	+	4	5	6	7
		6	0	0	0
		1	7	0	0
			1	5	0
	+			2	1
		7	8	7	1

a) Yes, the forklift can lift all 3 containers because 7871 is less than 8000.

b) I calculated the total because I used the table to add from left to right.

#### Practising

6. a)

	1	2	5	9
+		6	1	8
<hr/>				
	1	0	0	0
		8	0	0
			6	0
+			1	7
<hr/>				
	1	8	7	7

b)

$$\begin{array}{r} 6 \quad 9 \quad 6 \quad 3 \\ + \quad 2 \quad 3 \quad 6 \quad 4 \\ \hline 8 \quad 0 \quad 0 \quad 0 \\ 1 \quad 2 \quad 0 \quad 0 \\ \quad 1 \quad 2 \quad 0 \\ + \quad \quad \quad \quad 7 \\ \hline 9 \quad 3 \quad 2 \quad 7 \end{array}$$

### 3.5 Adding from Right to Left

#### Checking

1. Step 1:

2 thousands, 17 hundreds, 11 tens, 15 ones

Step 2: 15 ones, Yes I need to regroup 10 ones = 1 ten with 5 ones left over.

Step 3: 12 tens, Yes I need to regroup 10 tens = 1 hundred with 2 tens left over.

Step 4: 18 hundreds, Yes I need to regroup 10 hundreds = 1 thousand with 8 hundreds left over.

Step 5: 3 thousands. No regrouping needed.

3825

#### Practising

2.

	1	5	3	5
	2	8	6	5
+	3	1	4	5
	7	5	4	5

Yes, I had to regroup the ones, tens, and hundreds.

Yes, the group met it's goal because it got 7545 which is more than 7500 postings.

## 3.6 Estimating Differences

Step 1: Mount Logan is about 6000. Mount Everest is about 2850 m higher than Mount Logan because  $8850 - 6000 = 2850$ .

Step 2: Strategies will vary. For example:

*Fairweather Mountain is about 5000. Mount Everest is about 3850 m higher than Fairweather Mountain because  $8850 - 5000 = 3850$ .*

*Mount Columbia is about 4000. Mount Everest is about 4850 m higher than Mount Columbia because  $8850 - 4000 = 4850$ .*

## 3.7 Subtracting Numbers Close to Hundreds or Thousands

### Checking

1. Step 2: 1800 to 2000

Step 3: 2000 to 2010

Step 4:  $8 + 200 + 10 = 218$

218

### Practising

4. Step 1: 2998 to 3000

Step 2: 3000 to 4500

Step 3: 4500 to 4536

Step 4:  $2 + 1500 + 36 = 1538$

3. b) Jumps will vary. For example:

298 to 300

300 to 1000

$2 + 700 = 702$

$1000 - 298 = 702$

d) Jumps will vary. For example:

999 to 1000

1000 to 2000

2000 to 2007

$1 + 1000 + 7 = 1008$

$2007 - 999 = 1008$

## 3.8 Regrouping before Subtracting

### Checking

1. 1 thousand, 2 hundreds, 5 tens, 7 ones

a) Step 1: Yes, I need to regroup the thousands because I can't take away 7 hundreds from 2 hundreds. I need to regroup the hundreds, tens, and ones too.

Step 2: 11 hundreds + 14 tens + 17 ones

Step 3: 4 hundreds, 6 tens, 9 ones

469

### Practising

5. a) Answers will vary. For example:

*Mental math because I can take away 324 from 1324 without regrouping*

b) Explanations will vary. For example:

*Pencil and paper because I need to regroup the ones, tens, and hundreds.*

## 3.9 Subtracting by Renaming

### Checking

1. Explanations will vary. For example:

*I need to add 1 to the answer because I took 1 away from 5000 when I renamed it as 4999 + 1.*

3917

### Practising

4.  $5999 - 3456 = 2543 + 1 = 2544$

5. a) 600

$999 - 435 = 564 + 1 = 565$

b) 1600

$1999 - 435 = 1564 + 1 = 1565$

c) 2700

$2999 - 278 = 2721 + 1 = 2722$

6.  $6999 - 914 = 6085 + 1 = 6086$

## 3.10 Communicating about Number Concepts and Procedures

### Checking

1. Step 1: 1600

Step 2: 3700

Step 3:  $1600 + 3700 = 5300$

Step 4:  $6000 - 5300 = 700$

Explanations will vary.

### Practising

2. Steps will vary from student to student. For example:

Step 1: *2815 is about 2800. 3947 is about 3900.  $2800 + 3900 = 6700$ .*

*Bryan needs about 800 points to reach 7500 because  $7500 - 6700 = 800$ .*

Step 2:  $2815 + 3947 = 6762$ .  $7500 - 6762 = 738$

*I know my answer is reasonable because 738 is close to 800.*

## 4.1 Interpreting and Comparing Pictographs

### Checking

1. Explanations may vary from student to student. These are samples.

a) They both have a title, a legend.

They are different because the dots represent a different number of votes.

b) Yes. Diane's graph has 1 dot under Yes. This means 10 votes. Annie's graph has 2 dots which means 5 + 5 votes. They are the same.

c) 60, 60

d) It would take up too much space to draw all those circles.

### Practising

3. a) 8

b) 6

c) No, because Cara's number of blinks is not the same in both pictographs.

## 4.2 Constructing Pictographs

### Checking

1. a) Step 2: 6, 8, 8, 9, 18

b) Titles will vary.

Monday	△△△△△△
Tuesday	△△△△△△△△
Wednesday	△△△△△△△△
Thursday	△△△△△△△△△△
Friday	△△△△△△△△△△△△△△△△△△

Each △ means 25 visitors.

### Practising

2. a) team A, team C

b) 15, 10, 20

c) Scales and shapes will vary from student to student. Explanations will vary too. Here's a sample answer: Each △ means 1 bone.

Team A	△△△△△△△△△△△△△△△△△△△△△△△△
Team B	△△△△△△△△△△△△△△△△
Team C	△△△△△△△△△△△
Team D	△△△△△△△△△△△△△△△△△△△△△△

The shape was easy to draw. The scale is easy to count.



## 4.3 Interpreting and Comparing Bar Graphs

### Checking

1. Explanations will vary from student to student. These are sample answers.
  - a) The labels are the same. The scales are different.
  - b) *It's really hard to figure out the exact amount because the bars are in between the numbers on the scale.*
  - c) The loonies (\$1). The quarters (25¢).
  - d) *I would use a scale of 1 because it would be easier to figure out the exact amounts of each of the coins.*

### Practising

3.
  - a) 325, 75, 250
  - b) 325, 200, 100, 50;  $325 + 200 + 100 + 50 = 675$
  - c) *It looks like they show the same data but it's hard to tell because the bars are different heights and it's hard to figure out the exact amounts.*
  - d) *Keifer's scale is counting by 50 and Ryan's scale is counting by 100. You have to double 50 to get 100 so that's why Keifer's bars are twice as high as Ryan's bars.*

## 4.4 Constructing Bar Graphs

### Checking

1. Answers and explanations may vary from student to student. These are samples answers.
  - a) *No because 122 is a big number. The graph would be too high.*
  - b) Graphs will vary. Some students may use scales of 2, 4, 6 etc.
  - c) Explanations of scales will vary.

### Practising

2.
  - a) Graphs may vary from student to student.
  - b) Explanations of scales will vary.
  - c) *It's easier to see it in the graph. It's not as easy to see this with numbers.*

## 4.5 Graphs in the Media

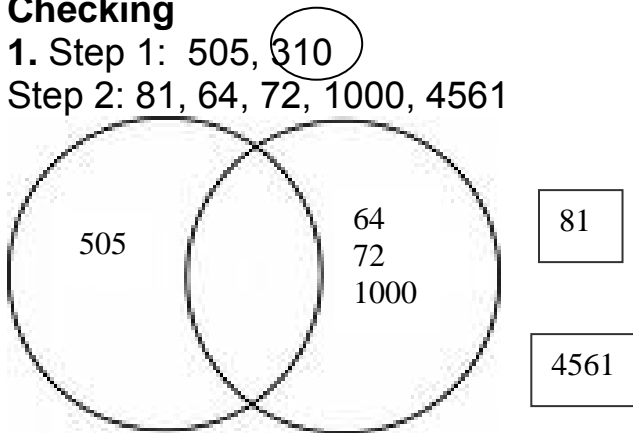
Answers will vary.

## 4.6 Using Venn Diagrams

### Checking

1. Step 1: 505, 310

Step 2: 81, 64, 72, 1000, 4561



### Practising

4. Sorting will vary. Some rules may include: odd/even numbers, multiples of 2, 3 or 5 etc.

## 4.7 Using Carroll Diagrams

### Checking

1. Step 1: 317, 427, 26, 270, 108, 118

Step 2: 1979, 3988, 3535, 4871, 1633, 3373

	Fewer than 4 digits	4 digits or more
Has the digit 1	317 108 118	1979 4871 1633
Does not have the digit 1	427 26 270	3988 3535 3373

b) No, because all the numbers fit into the sorting rules.

### Practising

2. a) Step 1: 25, 37, 15, 24, 17, 200, 36, 99, 168, 320, 10, 1280  
25, 24, 200, 168, 320, 1280

Step 2: 37, 15, 17, 36, 99, 10

	Tens digit is even	Ten digits is not even
3 digits or more	200 168 320 1280	
Fewer than 3 digits	25 24	37 15 17 36 99 10

b) Numbers chosen will vary.

## 4.8 Solving Problems using Diagrams

### Checking

Step 1:

	Cub	Not a cub
Male	7	3
Female	11	9

Step 2:  $10 - 7 = 3$

Step 3:  $30 - 10 - 11 = 9$

9 female bears are not cubs.

### Practising

2.

Step 1:

	Squares	Triangles
Red	8	3
Blue	21	8

Step 2:  $40 - 29 = 11$

Step 3:  $29 - 8 = 21$

Step 4:  $11 - 8 = 3$

There are 3 red triangles.

## 5.1 Lines of Symmetry

### Checking

- a) 4 ways. 4 lines of symmetry  
b) 2 ways. 2 lines of symmetry

### Practising

- a) 1 fold. 1 line of symmetry  
b) 0 folds. 0 lines of symmetry  
c) 2 folds. 2 lines of symmetry

## 5.2 Using a Symmetry Tool

### Checking

- a) 1 line of symmetry. Yes, it's symmetrical.  
b) 0 lines of symmetry. No, it's not symmetrical.  
d) 1 line of symmetry. Yes, it's symmetrical.

## 5.3 Identifying Symmetrical Shapes

Answers will vary based on the objects in the classroom.

## 5.4 Counting Lines of Symmetry

### Checking

- a) B has 0 equal sides. A has 2 equal sides. C has 3 equal sides.

## Practising

### 2. a)

Lines of Symmetry	Shapes
0	D
1	A
More than 1	B, C

### c)

Shape	Number of lines of symmetry	Number of equal sides
A	1	1
B	2	2
C	2	4
D	0	0

## 5.5 Communicating about Symmetry

### Checking

#### 1. a)

Shape A: *There are 4 lines of symmetry. There are 4 equal sides. The shape is symmetrical. The colours are symmetrical.*

Shape B: *There is 1 line of symmetry. There are 2 equal sides. The shape is symmetrical. The colours are symmetrical.*

### Practising

2. a) Answers will vary.

Shape 1: *There are 3 lines of symmetry. There are 3 equal sides. The shape is symmetrical.*

Shape 2: *There is 1 line of symmetry. There are 2 equal sides. The shape is symmetrical.*

Shape 3: *There is 1 line of symmetry. There are 2 equal sides. The shape is symmetrical.*

## 5.6 Creating Symmetrical Shapes

Answers will vary.

## 6.1 Multiplying by Skip Counting

### Checking

1. a)  $2 + 2 + 2 + 2 + 2 + 2 = 12$ ,  $6 \times 2 = 12$

$2 + 2 + 2 + 2 = 8$ ,  $4 \times 2 = 8$

b) Eastside: 6 jumps of 2 is 12 so  $6 \times 2 = 12$

Gully View: 4 jumps of 2 is 8 so  $4 \times 2 = 8$

Eastside donated 12 bikes.

Eastside donated 8 bikes.

### Practising

2. 35, 35,  $5 \times 7 = 35$ , There are 35 days in 5 weeks.

4. 3, 6 jumps, 3 and 6,  $6 \times 3 = 18$

## 6.2 Building on Multiplication Facts

### Checking

1. a) It's easier to figure out the total of 3 small groups.

b)  $5 \times 6 = 30$ ,  $1 \times 6 = 6$ ,  $1 \times 6 = 6$ ,  $7 \times 6 = 30 + 6 + 6 = 42$

### Practising

2. a) ○○○○

○○○○

○○○○

○○○○

○○○○

○○○○

$6 \times 4 = 24$

b) 32

3. a)  $7 \times 6 = 36 + 6 = 42$ ,  $7 \times 6$  has one more row of 6 so I added 6 to  $6 \times 6$ .

b)  $9 \times 5 = 40 + 5 = 45$ ,  $9 \times 5$  has one more row of 5 so I added 5 to  $8 \times 5$ .

c)  $8 \times 4 = 28 + 4 = 32$ ,  $8 \times 4$  has one more row of 4 so I added 4 to  $7 \times 4$ .

## 6.3 Doubling Multiplication Facts

### Checking

**1. a)** 12, 12 dancers,  $6 \times 2$ , If you double  $6 \times 2$  you get  $6 \times 4$ .  $6 \times 2 + 6 \times 2$ , 24

**b)** 14, 14 dancers.

○ ○ ○ ○  
○ ○ ○ ○  
○ ○ ○ ○  
○ ○ ○ ○  
○ ○ ○ ○  
○ ○ ○ ○  
○ ○ ○ ○

You can double  $7 \times 2$  to get  $7 \times 4$ .  $7 \times 2 + 7 \times 2$ . 28, 28 dancers

### Practising

**2.a)** 8, 3,  $2 \times 12 = 24$ , 24 dots.

**b)**  $1 \times 24 = 24$ . It's the same answer as part a). You can double this answer to figure out both rows.  $2 \times 24 = 1 \times 24 + 1 \times 24$ , 48.

## 6.4 Halving and Doubling Multiplication Facts

### Checking

**1.a)**  $9 \times 6 = 54$

**b)** ○ ○ ○ ○ ○ ○  
○ ○ ○ ○ ○ ○  
○ ○ ○ ○ ○ ○  
○ ○ ○ ○ ○ ○  
○ ○ ○ ○ ○ ○  
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○ ○ ○ ○ ○ ○  
○ ○ ○ ○ ○ ○

**c)**  $6, 4 \times 6 = 24, 4 \times 6 = 24, 1 \times 6 = 6, 24 + 24 + 6, 54, 54$  tires.



## Practising

2.a) ○○○○  
○○○○  
○○○○  
○○○○  
○○○○  
○○○○  
○○○○

$$6 \times 4 = 24$$

b) ○○○○○○○○  
○○○○○○○○  
○○○○○○○○  
○○○○○○○○  
○○○○○○○○  
○○○○○○○○  
○○○○○○○○

$$6 \times 8 = 48$$

c) 7 is one more than 6 so I can add one more package of batteries to the answer in part b). 1 package of batteries is 8 so  $48 + 8 = 56$ .  $7 \times 8 = 56$ .

## 6.5 Using 10s to Multiply

Step 1: 7, 10, 70, You can ask 7 students to hold up 5 fingers each.

Step 2:  $7 \times 9 = 63$ ,  $7 \times 9$  has 7 less fingers than  $7 \times 10$  so I can take 7 away from 70 to get 63.

Step 3:  $7 \times 8 = 56$ , if each student dropped 2 fingers each then that's  $7 \times 2 = 14$  fingers. So I can take away 14 fingers from  $7 \times 10$  to figure out  $7 \times 8$ .  $70 - 14 = 56$ .

Step 4: Answers will vary.

## 6.6 Multiplying by 8 and 9

### Checking

1. Part 1: 14, 14, 56, 56

Part 2: 7, 7, 63, 63

### Practising

3. 40, 6,  $60 - 12 = 48$ , 7,  $70 - 14 = 56$ , 8,  $80 - 16 = 64$ , 9,  $90 - 18 = 72$

9 x row: 45, 54, 63, 72

## 6.7 Sharing and Grouping

### Checking

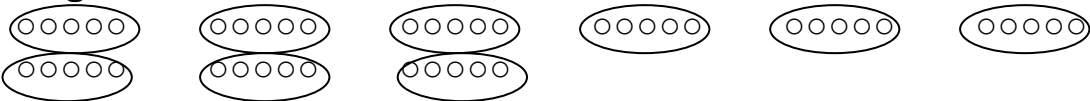
1. a) 6, 6  
b) 7, 7, 7, 7

### Practising

4. a) 3  
b) 7  
c) 6  
d) 7

## 6.8 Division and Multiplication

### Checking

1. 

9,  $45 \div 5 = 9$ ,  $5 \times 9 = 45$ , 9, 5, 9, 9

### Practising

2. 8, 4,  $4 \times 8$ , 4, 8  
4. 6, 6, 36,  $6 \times 6 = 36$ ,  $36 \div 6 = 6$ , 6

## 6.9 Patterns in a Multiplication Table

The answer is always 0.

The answer is the same as the number you multiply by 1.

The answer is the same as the number you divide by 1 because you're only making 1 group.

The answer is 1 because everyone gets 1 when you share.

## 6.10 Solving Problems by Working Backwards

### Checking

1. a) 7, 4

b) 4, 7,  $2 \times 4 \times 7 = 56$ , 56

c)  $56 \div 7 \div 4$

### Practising

2. how long the wire is.

4, 2, 7, 7, 2, 4, 7 +  $2 \times 4 = 36$ , 36 cm

## 7.1 Fractions of a Whole

### Checking

1. a)  $8, \frac{3}{8}$   
b)  $5, \frac{5}{8}$

### Practising

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

a) Answers will vary depending on the number of squares coloured.

b) Answers will vary depending on the number of squares uncoloured.

7. The second picture shows  $\frac{5}{6}$  because there are 6 equal parts and five unshaded parts.

## 7.2 Fractions of a Group

### Checking

1. a)  $4, \frac{2}{4}, 2$  parts coloured in,  $\frac{4}{4}, 4$  parts coloured in,  $\frac{1}{4}, 1$  part coloured in  
b)  $\frac{1}{4}, \frac{2}{4}, \frac{4}{4}$

### Practising

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

## 7.3 Sorting Fractions

Step 1: 

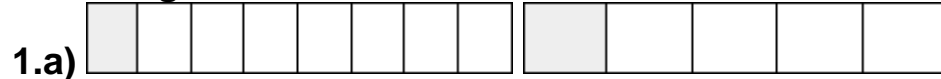
Step 2:  $\frac{3}{4}$  does not belong because there's one left over piece. The numerator and denominator is also different.

Step 3:  $\frac{4}{4}$  does not belong because it does not have 3 as the numerator.

Step 4:  $\frac{3}{3}$  does not belong because there are only 3 pieces and it does not have the same denominator as the other two.

## 7.4 Comparing and Ordering Fractions

### Checking



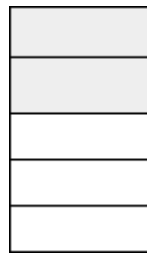
1, 1, Cory. More of Cory's strip is coloured so he's farther along the track.



Aneela. More of Aneela's strip is coloured so she's farther along the track.

### Practising

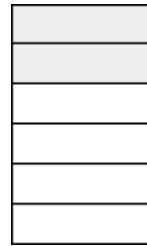
7.a) Division of the square will vary.



b) Division of the square will vary.

c)  $\frac{2}{5}$ , more space is coloured in with  $\frac{2}{5}$ .

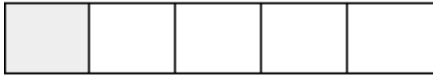
d)  $\frac{2}{8}$  is smaller than  $\frac{2}{5}$  because the pieces are smaller.



## 7.5 Using Benchmarks to Order Fractions

### Checking

1.

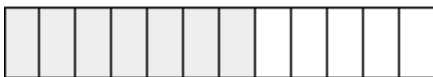
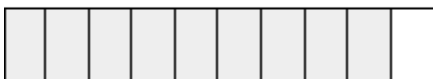
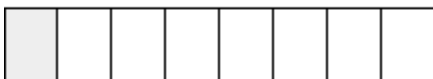
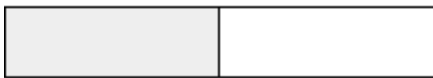


a) Ball 2 ( $\frac{7}{8}$ ) and Ball 3 ( $\frac{6}{10}$ ), Ball 1 ( $\frac{1}{5}$ ), Ball 2 ( $\frac{7}{8}$ )

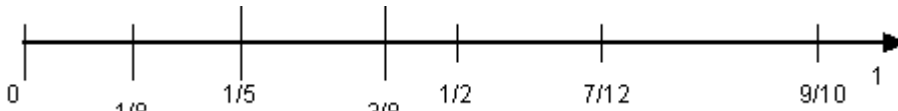
b)  $\frac{1}{5}$ ,  $\frac{4}{10}$ ,  $\frac{6}{10}$ ,  $\frac{7}{8}$

### Practising

2.



a)  $\frac{9}{10}$



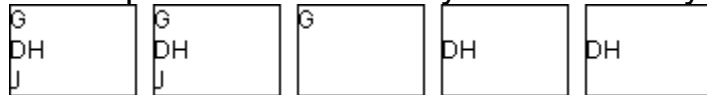
b)

c)  $1/8, 1/5, 3/8, 1/2, 7/12, 9/10$

## 7.6 Solve Problems by Drawing Diagrams

### Checking

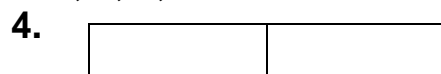
1. The placement on the symbols will vary. This is a sample.



2

### Practising

3. 3, 4, 3,  $3/10$



1, 2

## 7.7 Decimal Tenths

### Checking

1.  $1/10$ , one out of 10 or one tenths. 2 parts coloured in the fraction strip.

2.  $2/10$ , two out of ten or two tenths, 0.2

### Practising

1. a)  $3/10, 0.3$

b)  $10/10, 1.0$

c)  $1/10, 0.1$

6. a) Drawings will vary depending on the student. For example, 2 red, 2 blue, 6 green.

b) Answers will vary depending on drawing in part a). For example red ( $2/10, 0.2$ ), blue ( $2/10, 0.2$ ), green ( $6/10, 0.6$ )

## 7.8 Decimal Hundredths

### Checking

- a) 69,  $\frac{69}{100}$ , sixty nine out of a hundred or sixty nine hundredths, 0.69  
b) 6,  $\frac{6}{100}$ , six out of a hundred or six hundredths, 0.06

### Practising

- b) nine out of a hundred or nine hundredths, 0.09  
c)  $\frac{30}{100}$ , 0.3
- a) Design will vary.  
b) Answers will vary depending on design in part a)  
c) Answers will vary depending on design in part a)

## 7.9 Representing Decimals with Coins

### Checking

- a) 45, 45, 4 dimes and 5 pennies  
b) 92, 92, 9 dimes and 2 pennies

### Practising

- a) 3, 0.30, 4, 0.04, 0.34  
b) 2.61
- dollars (wholes), dimes (tenths), pennies (hundredths)

## 7.10 Estimating Decimal Sums and Differences

### Checking

- Step 1: 7, 6, 12  
Step 2:  $7 + 6 + 12 = 25$ , 25
- Step 1: 27  
Step 2:  $26.89 - 25 = 1.89$ , 1.89

### Practising

- a)  $3 + 1 = 4$   
b) 1, 3,  $4 - 1$  is 3.
- Step 1: 1, 1, 3  
Step 2:  $1 + 1 + 3 = 5$ , No, Michael does not have enough money because the estimated cost of \$5.00 is more than \$3.50.



## 7.11 Using Mental Math

### Checking

1. 11.99, 12.00, 9.99, 10.00,  $12.00 + 10.00 = 22.00$ ,  $22.00 - 0.02 = 21.98$ , 21.98

Answers will vary depending on the strategies students use. One possible suggestion may be  $12.00 + 9.99 = 21.99 - 0.01 = 21.98$

### Practising

5. a)  $10.99 + 0.01 = 11.00$ ,  $6.99 + 0.01 = 7.00$ ,  $11.00 + 7.00 = 18.00 - 0.02 = 17.98$ .

b) 31.80 rounded to the nearest dollar is 32.00.  $42.00 + 32.00 = 74.00 - 0.20 = 73.80$ .

## 7.12 Making Change

### Checking

1. a) Step 1: \$22.00

Step 2:  $\$40.00 - \$22.00 = \$18.00$

b) 0.01, 3.00, 5.00, 10.00, \$18.01

### Practising

2. a) Step 1: \$11.00,  $\$15.00 - \$11.00 = \$4.00$

Step 2: 0.03, 0.20, 0.50, 3.00, \$3.73

3. twenty dollar bill, \$15.02, \$8.02

## 7.13 Adding and Subtracting Decimals

### Checking

1. a) Step 1: 0.40

Step 2: 0.60 m

Step 3: 0.60 m

Step 4:  $0.60\text{ m} + 0.60\text{ m} = 1.20\text{ m}$ , 1.20 m

b) Step 1: 1.00 m

Step 2: 0.10 m

Step 3: 0.01 m

Step 4:  $1.00\text{ m} + 0.10\text{ m} + 0.01\text{ m} = 1.11\text{ m}$ , 1.11m

### Practising

3. Answers will vary depending on the number of jumps. This is a sample answer: *2.5 m to 4.5 m is 2.0 m. 4.5 m to 5.0 m is 0.5 m. 5.0 m to 5.4 m is 0.4 m. The giraffe's body is  $2.0\text{ m} + 0.5\text{ m} + 0.4\text{ m} = 2.9\text{ m}$ .*

## 8.1 Telling Time to the Hour

### Checking

1. 5:00, Five o'clock, in the afternoon (pm), 5, 12, five, afternoon, 5:00 pm

### Practising

2. a) 11, eleven, morning, 11:00 am

b) 6, six, morning, 6:00 am

3. a) 4:00, pm, 4:00 pm

b) 8:00, pm, 8:00 pm

## 8.2 Time to the Half Hour and Quarter Hour

### Checking

1. a) 4, 3, 15, 15, quarter, 4:15, quarter after 4

b) 8, 9, 9, 45, 45, quarter to, 8:45, quarter to 9

c) 1, 6, 30, 30, half, 1:30, half past 1

### Practising

2. a) 12:30, half past 12

b) 1:15, quarter past 1

c) 7:45, quarter to 8

3. 15 minutes. I started with 30 and counted by 5 s to get to 45.

## 8.3 Telling Time to 5 Minutes

### Checking

1. 8, 5, 25, 10:25

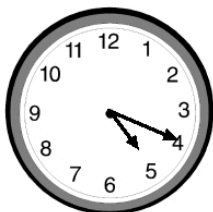
### Practising

2. a) 12:05, 5 after 12

b) 9:40, 40 after 9, 20 minutes to 10

c) 8:20, 20 after 8, 40 minutes to 9

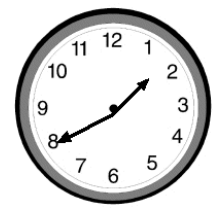
3. a)



b)



c)



## 8.4 Telling Time to 1 Minute

### Checking

1. 1, between 1 and 2, 8
2. a) 6, 33, 8:33  
b) 8, 33 minutes after 8, 9, 27, 27 minutes to 9

### Practising

3. a) 9:08  
b) 1:54  
c) 2:16
4. a) 4, 18, 18 minutes to 4, 18  
b) 6, 1, 1 minute to 6, 1  
c) 7, 26, 26 minutes to 7, 26

## 8.5 Writing Dates and Times

### Checking

1. a) year, day, month, September, September 19, 1999  
b) 7:00 pm, 7:19 pm

### Practising

2. a) 1, 01  
b) 3, 1989-03-15
3. a) 1867, 07, July, 1, July 1, 1867  
b) 2004, 10, October, 30, October 30, 2004
4. 15-03-2008, 15/03/2004, 03-15-2004
5. a) 10:00 pm  
b) 6:15 am

## 8.6 Measuring with Area Units

### Checking

1. a) Step 2: Answers will vary depending on the pattern block chosen.  
b) I used the square because I can cover the bookmark with no gaps or spaces with it. There's gaps will the other blocks.

### **Practising**

2. Answers will vary depending on the books chosen.
3. No because there will be gaps between the circles when you cover the space.

## **8.7 Counting Square Units**

### **Checking**

1. a) black, white or grey (any are acceptable)
- b) 31
- c) 29
- d) 40
- e) white, grey, black

### **Practising:**

2. a) 9, 12, 7
- b) T, C, A
- c) 15, 13, 63
- d) white, black, grey

## **8.8 Using Square Centimetres**

### **Checking**

1. a) A, because it looks bigger.
- b) 20, 18
- c) 16, about 17

### **Practising**

3. a) A, because it looks like it takes up more space than B.
- b) about  $19 \text{ cm}^2$ , about  $10 \text{ cm}^2$

## **8.9 Using Square Metres**

### **Checking**

1. Answers will vary from student to student.

### Practising

2. a)  $m^2$  because it's a large space.
- b)  $cm^2$  because it's a smaller space so you need a small unit.
- c)  $m^2$  because it's a large space.
- d)  $cm^2$  because it's a smaller space so you need a small unit.
3. A floor tile because it looks like a square.
4. Answers will vary from student to student.

## 8.10 Estimating Areas

Answers will vary from student to student.

## 8.11 Solving Problems Using Organized Lists

### Checking

1. 36, Make different rectangles with area of  $36\text{ cm}^2$ .

Rows	Yes, No or Same as?
1 row of 36	yes
2 rows of 18	yes
3 rows of 12	yes
4 rows of 9	yes
5 rows	no
6 rows of 6	yes
7 rows	No
8 rows	No
9 rows of 4	same as 4 rows of 9

There are 5 different rectangles.

### Practising

2. The area is 40 cm<sup>2</sup>. I have to find as many different rectangles as possible. I will use the tiles to make different rows.

Rows	Yes or No?
1 row of 40	yes
2 rows of 20	yes
3 rows	no
4 rows of 10	yes
5 rows of 8	yes
6 rows	no
7 rows	no
8 rows of 5	same as 5 rows of 8
9 rows	no
10 rows of 4	Same as 4 rows of 10

There are 4 different rectangles.

## 8.12 Estimating Areas on Grids

### Checking

1. Answers will vary from student to student.

### Practising

2. Answers will vary from student to student, depending on the object chosen.

3. Answers will vary.

4. Yes, it is because there are 100 cm in 1 m.

## 9.1 Exploring Multiplication

Answers will vary. This is a sample answer: 24 students. Each person gets 1 slice. 1 pizza has 8 slices. I can count by 8s to get 24 slices. 8, 16, 24. Our class needs 3 pizzas. 1 pizza costs \$10 so 3 pizzas cost \$30 because  $10 + 10 + 10 = 30$ .

## 9.2 Multiplying 10s and 100s

### Checking

#### 1. Step 1:

Number of bracelets		Number of beads
1	100	100
2	200	200
3	300	300
4	$4 \times 1 \text{ hundred} = 400$	400
5	$5 \times 1 \text{ hundred} = 500$	500
6	$6 \times 1 \text{ hundred} = 600$	600
7	$7 \times 1 \text{ hundred} = 700$	700

#### Step 2:

Number of bracelets		Number of pins
1	50	50
2	100	100
3	150	150
4	$4 \times 5 \text{ tens} = 200$	200
5	$5 \times 5 \text{ tens} = 250$	250
6	$6 \times 5 \text{ tens} = 300$	300
7	$7 \times 5 \text{ tens} = 350$	350

Diane needs 700 beads and 350 pins.



**Practising**

- 2. a) 7, 7, 70
- b) 3, 4, 12, 120
- c) 5, 4, 20, 200
- d) 9, 20, 180, 1800
- 4. a) 4
- b) 6
- c) 8
- d) 100

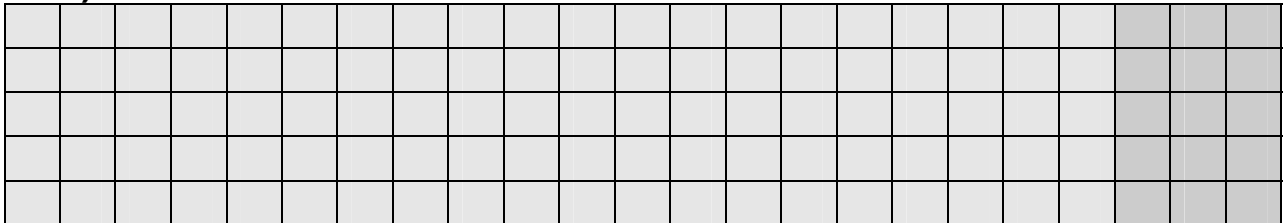
## 9.3 Multiplying Using Arrays

**Checking**

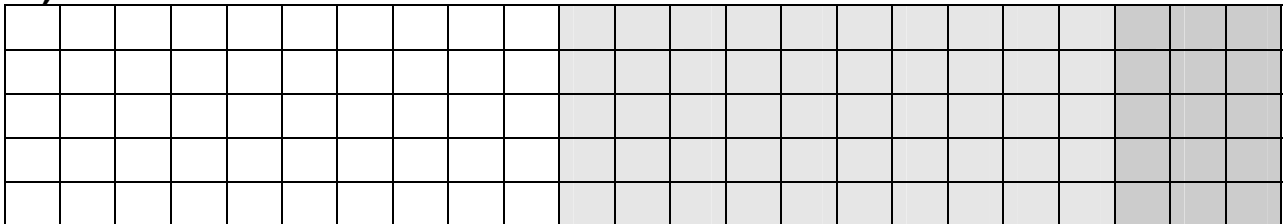
- 1. a) 5, 6, 6, 5, 8, 8, 6, 8
- b) 6, 8, 30 + 40, 70

**Practising**

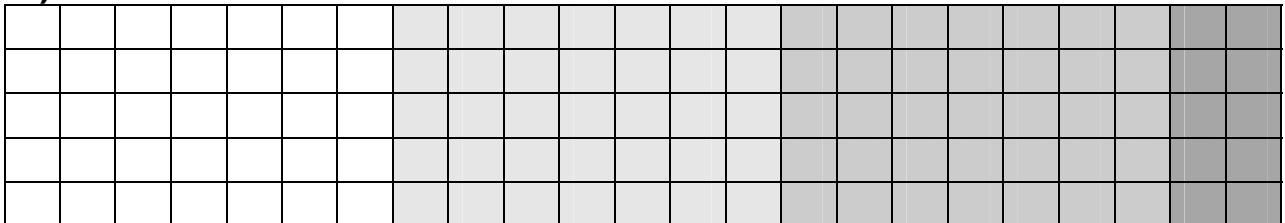
- 3. a) 2, 60 + 12, 72
- b)  $7 \times 6 + 7 \times 5$ , 42 + 35, 77
- 9. a)



b)



c)



## 9.4 Multiplying Using Expanded Form

### Checking

Step 1: 3

Step 2: 4

Step 3: 12 tens + 8 ones, 128

### Practising

5. a) 60,  $6 \times 60 = 360$

b) 6 tens + 4 ones, 36 tens + 24 ones, 384

## 9.5 Estimating Products

### Checking

1. 2,  $30 \times 2 = 60$

2. a) 50,  $9 \times 50$ . 9 is close to 10 so you can estimate with  $10 \times 48$

b) 360,  $4 \times 360$ . 355 is close to 350 so you can estimate with  $4 \times 350$ .

### Practising

6. a) calculate, 490, 14,  $490 + 14 = 504$ , 7 CDs is enough.

b) exact, estimate. 80,  $3 \times 80 = 240$ . There is about 200 dumplings.

c) estimate because 287 is close to 300 so  $300 \times 3 = 900$ . He did not save at least \$900 because 287 is less than 300.

## 9.6 Communicating about Solving Problems

### Checking

1. a) Answers will vary from student to student. *She explained how she checked her work to make sure it makes sense.*

b) Answers will vary from student to student. *Why did you calculate  $19 \times 4$ ? How did you calculate  $19 \times 4$ ?*

### Practising

2. Step 1: 7, 13

Step 2: I plan to find out  $7 \times 13$ .

Step 3: Strategies will vary from student to student. 91.

Step 4: Answers will vary from student to student. *My answer makes sense because I know  $7 \times 10 = 70$  and  $7 \times 3 = 21$  so  $70 + 21 = 91$ .*

## 9.7 Multiplying 3-Digit Numbers

### Checking

- a) 300, 35, 1635  
b) 100, 1500, 1635

### Practising

- a) 1000,  $3 \times 1000 = 3000$ ,  $1800 + 240 + 18 = 2058$   
b) 200,  $5 \times 200 = 1000$ ,  $500 + 400 + 5 = 905$   
c) 300,  $7 \times 300 = 2100$ ,  $2100 + 210 + 14 = 2324$

## 9.8 Multiplying Another Way

### Checking

- a) Step 1: 14, 1 tens 4 ones, 42, 4 hundreds 2 tens  
Step 2: 4 hundreds 3 tens 4 ones, 434  
b) Step 1: 35 ones = 3 tens 5 ones, 28 tens = 2 hundreds 8 tens, 7 hundreds  
Step 2: 1015

### Practising

- 4, 333,  $4 \times 333$ , 1 thousand 3 hundreds 3 tens 2 ones, 1332

## 9.9 Choosing a Method to Multiply

### Checking

- a) calculate  
b) estimate because I don't need to know the exact number.  
2. a)  $6 \times 33$ . Strategies will vary from student to student. 1818  
b)  $9 \times 44$ . Strategies will vary from student to student. 396

### Practising

- a)  $3 \times 250$ . I would use mental math because I can add  $250 + 250 + 250 = 750$   
b)  $2 \times 365$ . I would use base ten blocks so I can regroup.  
6. D, because I don't need to know the exact number of hours.

## **9.10 Creating Multiplication Problems**

Answers will vary from student to student.

## 10.1 Exploring Division

Step 2: 23

Step 3: 7

Step 4: They can make 30 reflectors without leftovers because  $23 + 7 = 30$ .

Step 5: Answers will vary from student to student. For example: *I can use division.  $90 \div 3 = 30$ .*

## 10.2 Relating Division to Multiplication

Step 2: 15, 15,  $6 \times 15 = 90$

Step 3:  $5 \times 3 = 15$

Step 4: Answers will vary from student to student. For example: *I used division.  $90 \div 6 = 15$ .  $15 \div 3 = 5$*

## 10.3 Using Subtraction to Divide

### Checking

1. a) 39, 9, 1 because  $6 \times 1 = 6$ , 3,  $10 + 5 + 1 = 16$

b) 3

### Practising

2. a) 50, 12, 2 because  $2 \times 5 = 10$ , 2,  $10 + 2 = 12$

b) 2

6. Answers may vary. For example: *17 rows or  $10 + 7 = 17$  rows.*

## 10.4 Dividing by Renaming

### Checking

1. a)  $92 \div 4$
- b) 80, 12,  $80 + 12$
- c) 80, 12,  $20 + 3$ , 23, 23 cards

### Practising

3. a)  $60 + 15$ , 60, 15,  $12 + 3 = 15$ , 15
- b)  $40 + 18$ , 40, 18,  $10 + 4R2$ ,  $14R2$ ,  $14R2$
- c)  $70 + 22$ , 70, 22,  $10 + 3R1$ ,  $13R1$ ,  $13R1$
- d)  $81 + 13$ , 81, 13,  $9 + 1R4$ ,  $10R4$ ,  $10R4$

\* Students may decompose 92 and 94 in other ways compared to those shown above.

## 10.5 Estimating Quotients

### Checking

1. a) 50, 50
- b) 6, 6,  $6 + 6 = 12$ , 12

### Practising

3. a)  $10 + 5$ , 15
- b)  $80+8$ , 80, 8,  $10 + 1$ , 11
- c) 84,  $70 + 14$ ,  $10 + 2$ , 12

## 10.6 Dividing by Sharing

### Checking

1. a) Step 1: 7 tens 2 ones

Step 2: 1

Step 3: 1, 12, 2 ones in each group, 1 tens 2 ones, 12

b) No because 3 isn't enough to share into 6 equal groups.

### Practising

4. a)  $85 \div 5 = ?$

b) 15

c) My answer is reasonable because if I add 15 five times it will equal 85.

$15 + 15 + 15 + 15 + 15 = 85$ .

## 10.7 Solving Problems by Guessing and Testing

### Checking

1. Understand the Problem: 1, 6, 8

Make a Plan/Carry Out the Plan: Answers will vary from student to student as they test out different numbers. 25 or 49

### Practising

2. Understand the Problem: 1, 3, 2

Make a Plan/Carry Out the Plan: Answers will vary from student to student as they test out different numbers.

*One possible number is 37. ( $37 \div 3 = 12R1$ ,  $12 \div 5 = 2R2$ )*

3. Answers will vary from student to student as they use different numbers.

For example:  $51 \div 3 = 17$  (all odd numbers)

## 11.1 Recognizing Rectangular Prisms

Rectangle.

They all have 6 faces.

Some of the faces are tall and some are wide.

Answers will vary from student to student. *They all have a rectangle as a front face. They all have 6 faces. They all have 12 edges. They all have 8 vertices.*

Answers will vary from student to student. *They are different sizes. Some are tall and some are wide.*

## 11.2 Recognizing Triangular Prisms

### Checking

1. Yes. Yes. Yes. Yes.

Explanations will vary from student to student. *All triangular prisms have 5 faces (3 rectangles + 2 triangles).*

### Practising

2. Shape A: 1, 4, yes.

Explanations will vary from student to student. *No, Shape A is not a triangular prism because it has 4 triangle faces and only 1 rectangle face.*

Shape B: Explanations will vary from student to student. *Yes, Shape B is a triangular prism because it has 5 faces (2 triangle faces + 3 rectangle face).*

Shape C: Explanations will vary from student to student. *No, Shape C is not a triangular prism because it has 6 faces (all rectangles). Rectangular prisms have both triangle and rectangle faces.*



## 11.3 Communicating about Prisms

### Checking

1.

Objects	Number of faces	Shapes of faces	Number of edges	Number of vertices
A	5	Triangles and rectangles	9	6
B	5	Triangles and rectangles	9	6
C	6	Rectangles	12	12
D	6	Rectangles and squares	12	12
E	5	Triangles and rectangles	9	6

Explanations will vary from student to student. Students may sort by the number of faces, the number of edges, the number of vertices, the shape of the faces, objects with the same number of edges and vertices etc.

### Practising

4.

Objects	Type of prism	Shape of bases	Shapes of other faces	Number of faces	Number of edges	Number of vertices
A	Rectangular	Rectangle	Rectangles	6	12	12
B	Triangular	Rectangle	Triangles	5	9	6
C	Triangular	Rectangle	Triangles	5	9	6
D	Rectangular	Rectangle	Rectangles	6	12	12
E	Rectangular	Rectangle	Rectangles	6	12	12

**b)** Explanations will vary from student to student. Students may sort by the number of faces, the number of edges, the number of vertices, the shape of the faces, the shape of the bases etc.

**5. a)** Answers will vary from student to student. For example: It has 6 faces that are rectangles. It has 12 edges and 12 vertices. It is a rectangular prism.

**b)** Answers will vary.

## 11.4 Constructing Prisms

Step 1: Answers will depend on the type of pattern blocks students choose.

Step 2: Answers will vary from student to student. For example: *You cut across the diagonal on the rectangular prism to make the triangular prism.*

## 11.5 Constructing Prisms from Nets

Answers will vary from student to student.