

Excel

YEARS
6
to
7

Calculator Workbook

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ESSENTIAL
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Lyn Baker

Factors, Multiples, Prime and Composite Numbers

- 1** List the first six multiples of:
- a** 9
.....
- b** 13
.....
- c** 28
.....
- 2** List **all** the factors of:
- a** 28
.....
- b** 59
.....
- c** 144
.....
- 3** Refer to question 2. List the prime factors of:
- a** 28
.....
- b** 144
.....
- 4** Is 17 a factor of these numbers?
- a** 6681
.....
- b** 15 349
.....
- c** 97 104
.....
- d** 1 419 857
.....
- e** 1 184 832
.....
- 5** What is the first multiple of 7 that is greater than 1000?
.....
- 6** Find the multiple of 19 that lies between 1475 and 1500.
.....
- 7 a** Cross out the even numbers in this list.
71 72 73 74 75 76 77 78 79 80 81
82 83 84 85 86 87 88 89 90 91 92
93 94 95 96 97 98 99
- b** Cross out all the multiples of 3 in the list above that are not already crossed out.
- c** Explain why all the multiples of 4 will already be crossed out in the above list.
.....
- d** Cross out the multiples of 5 and 7.
- e** Explain why any multiple of 11 should already be crossed out and why there should be no other multiples left to cross out.
.....
- f** Write down the prime numbers between 70 and 100.
.....
- 8** Determine whether these numbers are prime or composite:
- a** 137
.....
- b** 203
.....
- c** 631
.....
- d** 927
.....
- 9** Express as the product of its prime factors:
- a** 888
.....
- b** 6815
.....

1 Adding and Subtracting

- 1 Find the sum of 8756 and 230 924.
.....
- 2 Find the difference between 468 213 and 59 287.
.....
- 3 Find the sum of three thousand and seventy-six and nine thousand, two hundred and eight.
.....
- 4 Add 1 260 000 to 13 million.
.....
- 5 Subtract 5 964 750 from 12 million.
.....
- 6 The odometer of a car shows how many kilometres have been travelled. Sid drove to Cairns. When he left home the odometer reading was 127 582 km and when he reached Cairns it read 129 461 km.
 - a How far did Sid travel on his drive to Cairns?
.....
 - b Sid travelled 187 km while in Cairns. What was the odometer reading just before he left?
.....
 - c When Sid reached home the odometer read 131 842 km. How much further was the trip home than the journey to Cairns?
.....
- 7 A farmer has cows in three different paddocks. The first paddock has 257 cows, the second has 152 cows and the third has 134.
 - a How many cows are there altogether in the three paddocks?
.....

- b How many cows would need to be moved from the second paddock to the third so that those two paddocks have the same number of cows?
.....
.....
- 8 These are the areas, in square kilometres, of six English counties.

County	Area (km ²)
Devon	6707
Dorset	2653
Durham	2721
Norfolk	5372
Suffolk	3798
Surrey	1663

- a What is the difference in area between Dorset and Durham?
.....
- b How much greater is the area of Devon than Surrey?
.....
- c Norfolk and Suffolk are adjoining counties. What is their total area?
.....
- d Which two of these counties have a combined area almost the same as the area of Norfolk?
.....
.....

1 Multiplication and Division

1 Find the product of 37 and 23.

.....

2 Find $8375 \div 125$.

.....

3 What is the remainder when 876 is divided by 7?

.....

4 Find:

a $\frac{627 \times 48}{18 \times 8}$

b $\frac{672 \div 3}{7 \times 32}$

.....

5 Complete: $9283 \div 31 = \underline{\hspace{2cm}} \text{ r } \underline{\hspace{2cm}}$

6 Complete:

a $27 \times \underline{\hspace{2cm}} = 2457$

b $6945 \div \underline{\hspace{2cm}} = 463$

c $\underline{\hspace{2cm}} \div 83 = 47$

7 Leanne buys some steel posts priced at \$38 each.

a How much will she pay for 15 posts?

.....

b How many posts can she buy for \$342?

.....

8 Micky collects model cars. He has his cars arranged in five rows with 18 cars in each row.

a How many cars does Micky have?

.....

b If Micky arranged the cars into six rows, how many would be in each row?

.....

c Micky buys another eight cars. How many rows will he have if there are 14 cars in each row?

.....

.....

9 The cost of hiring a limo is \$540.

a Find the cost per person if five people share the cost.

.....

b How much less will each person pay if six people share?

.....

.....

c If seven people pay \$75 each, how much extra will be needed to cover the cost?

.....

.....

.....

.....

10 A container holds boxes. The boxes are stacked five wide, three high and eight long.

a How many boxes fit in the container?

.....

b Each box holds 210 packets of pens and there are six pens in each packet. How many pens does the container hold?

.....

.....

.....

1 Mixed Operations

1 Find:

a $2783 + 92\,641 + 50\,920$

.....

b $3\,500\,000 - 29\,745$

.....

c $23\,576 \times 14\,002$

.....

d $585\,495\,894 \div 18\,246$

.....

2 Find:

a $\frac{37 + 4869}{2975 - 2752}$

.....

b $57 \times 34 \div 19 + 29 - 101$

.....

3 What is the quotient when 10 767 is divided by 291?

.....

4 What is the remainder when 56 is divided by 17?

.....

5 a How many boxes will be needed to hold 524 apples if 40 apples fit in each box?

.....

b How many more apples are needed to fill the final box?

.....

6 Gaynor is paid the same amount for every policy she sells. One month she sold 25 policies and was paid \$6500.

a How much is Gaynor paid for each policy?

.....

b How much does Gaynor earn in a month when she sells 35 policies?

.....

c How many policies did Gaynor sell in the month that she earned \$4940?

.....

7 The table shows the number of students in some of the years at Comehere Central School.

Year	Number of students
6	212
7	197
8	243
9	228
10	184

a What is the difference between the highest number of students in a year and the lowest?

.....

b What is the total number of students?

.....

c If 39 students are away in Year 6, how many are present?

.....

d If each student in Year 7 paid \$15 for a charity event, how much money would be raised?

.....

e If each student in Year 10 paid \$16 each for the same charity event, how much more, or less, than Year 7 would they raise?

.....

2 Mixed Operations

- 1 This table shows Rosie's expenses for April, May and June.

Rosie's expenses (\$)			
Expense	April	May	June
Admin.	53	97	168
Advert.	612	127	
Energy	1013	1135	1194
Materials	2375	4865	3922
Rent	590	590	590
Other	471	1236	828

- a What was the total of all the expenses in April?
-
- b What was the total of the energy expense for the three months?
-
- c What was the difference between the cost of materials in May and in June?
-
- d The expense for advertising in June is missing. If the total of all expenses in June was \$7021, what was the missing amount?
-
-
- e How much more was spent on administration expenses in June than in April and May combined?
-
-
- f Which month had the greatest total expenses and how much more was spent in that month than in the month with the lowest total?
-
-

- g What was the average monthly amount spent on those expenses shown as other expenses?
-
-

- h What would be the total rent for a full year?
-
-

- 2 By how much does the sum of 139 and 527 exceed their difference?
-
-

- 3 Complete:

a $97\,204 + \underline{\hspace{2cm}} = 203\,725$

b $\underline{\hspace{2cm}} - 18\,274 = 18\,472$

c $672 \times \underline{\hspace{2cm}} = 49\,728$

d $\underline{\hspace{2cm}} \div 93 = 93$

e $15\,860 - \underline{\hspace{2cm}} = 7777$

f $2976 \div \underline{\hspace{2cm}} = 96$

- 4 A carton of 24 cans of dog food costs \$59.95. The cans can also be bought for \$2.70 each. How much will you save by buying a carton?
-
-

- 5 a The population of India is about 1 270 000 000 which is about 276 times the population of New Zealand. What is the approximate population of New Zealand?
-
-

- b The population of France is about 14 times the population of New Zealand. What is the approximate population of France?
-
-

1 Order of Operations

1 Find:

a $15 + 6 \times 4$

.....

b $32 - 19 + 17$

.....

c $25 \div 5 + 3$

.....

d $132 - 24 \div 12$

.....

e $42 + 17 \times 3 - 9$

.....

f $19 \times 8 + 16 \times 5$

.....

g $48 - 18 \div 3 + 2 \times 5$

.....

h $63 \div 7 + 121 \div 11$

.....

2 Evaluate:

a $(19 + 56) \div 3$

.....

b $1053 \div (17 + 10)$

.....

c $(93 + 78) \times (104 + 67)$

.....

d $29 \times (32 + 17) \times 11$

.....

e $58 - (2 + 3 \times 4)$

.....

f $(425 - 128) \div 9 \times 11$

.....

3 Remove all grouping symbols and evaluate:

a $[(24 + 13) \times 18 + 5] \div 11$

.....

b $56 + 2 \times [178 - (3 \times 24 + 7)]$

.....

c $[(19 + 2) \times 17 - 5] \div 32$

.....

d $78 \div [(15 - 3) \div 4]$

.....

e $\{13 + [12 \times (9 + 14) + 6]\} \div 5$

.....

f $\{83 - [(7 \times 2 + 6) - 11] \div 3\} \times 16$

.....

4 In a test, Carly gave the answer to the question to find the value of $37 + 45 \times 17$ as 1394. Was Carly correct? Explain why or why not.

.....

.....

.....

5 Place grouping symbols to make these number sentences correct:

a $13 + 25 - 19 \times 3 = 31$

b $57 \div 5 \times 3 + 4 = 3$

c $296 - 101 \div 5 + 8 = 15$

d $26 \times 15 + 32 \div 13 = 94$

e $73 \times 14 - 70 \div 17 = 56$

f $16 + 8 \times 3 - 26 + 14 = 0$

g $9 + 5 \times 3 - 2 + 8 \div 4 = 12$

h $9 + 39 \times 4 + 192 \div 12 \times 32 = 1$

1 Find these squares:

- a 57^2
- b 183^2
- c 2476^2
- d $30\,675^2$

2 Find these square roots:

- a $\sqrt{841}$
- b $\sqrt{6889}$
- c $\sqrt{15\,129}$
- d $\sqrt{12\,061\,729}$

3 Find:

- a $\sqrt{64} + \sqrt{225}$
- b $\sqrt{64 + 225}$
- c $\sqrt{1369} - \sqrt{1225}$
- d $\sqrt{1369 - 1225}$
- e $\sqrt{81} \times \sqrt{49}$
- f $\sqrt{81 \times 49}$
- g $\frac{\sqrt{2304}}{\sqrt{16}}$
- h $\sqrt{\frac{2304}{16}}$
- i $\sqrt{\frac{785^2 - 783^2}{56^2}}$
- j $\frac{\sqrt{1024} + 22^2}{14^2 + \sqrt{3844}}$

4 Find:

- a 7^3
- b 41^3
- c 563^3
- d 1234^3

5 Find:

- a $\sqrt[3]{1331}$
- b $\sqrt[3]{21\,952}$
- c $\sqrt[3]{27\,818\,127}$
- d $\sqrt[3]{216\,000\,000}$

6 Find $\sqrt{4583}$ giving the answer to the nearest whole number.

.....

7 $\sqrt{351}$ lies between which two consecutive whole numbers?

.....

8 The square of what number lies between 520 and 530?

.....

9 Which number between 1765 and 1935 is a perfect square?

.....

10 What number between 54 950 and 63 950 is the cube of a whole number?

.....

2 Indices

1 Find the value of:

- a 2^6 _____
- b 3^9 _____
- c 5^7 _____
- d 18^3 _____
- e 35^4 _____
- f 76^5 _____

2 Use a calculator (and trial and error) to find the missing values:

- a $3^{\quad} = 243$ _____
- b $\quad^7 = 128$ _____
- c $8^{\quad} = 8\ 589\ 934\ 592$ _____
- d $\quad^{13} = 67\ 108\ 864$ _____

3 Find the value of:

- a $2^3 \times 5^4$ _____
- b $3^6 \times 7^2$ _____
- c $11^5 \times 3^3$ _____
- d $10^8 \times 7$ _____

4 Are these statements true or false?

- a $2^5 \times 3^5 = 6^5$ _____
- b $4^8 = 2^{16}$ _____
- c $3^4 \times 3^2 = 3^8$ _____
- d $5^6 + 2^4 = 7^{10}$ _____
- e $7^9 \div 7^3 = 7^3$ _____
- f $2^{12} \times 2^{10} = 2^{22}$ _____

- g $3^6 \times 5^2 = 15^8$ _____
- h $5^4 \times 2^4 = 10^4$ _____

5 Find the value of:

- a $3 \times 2^5 \times 5^2$ _____
- b $2^2 \times 3^4 \times 5^3$ _____
- c $6^2 + 8^2$ _____
- d $2^3 + 7 \times 2^2$ _____

6 Complete:

$$126 = 2 \times \underline{\quad}$$

$$= 2 \times 3 \times \underline{\quad}$$

$$= 2 \times 3 \times 3 \times \underline{\quad}$$

So $126 = \underline{\quad} \times 3^2 \times \underline{\quad}$

7 a Complete:

$$900 = 3 \times 3 \times \underline{\quad} \times \underline{\quad}$$

$$= 3 \times 3 \times \underline{\quad} \times \underline{\quad} \times \underline{\quad} \times \underline{\quad}$$

b Write 900 as the product of powers of its prime factors.

8 Write each of these as the product of powers of prime numbers.

- a 392

- b 15 125

1 Integers

1 Arrange these numbers in ascending (increasing) order:

a -7, -9, -5, -2, -4

.....

b 5, 0, -3, -6, 2, -10

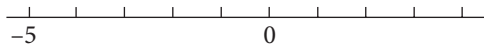
.....

c -25, -17, -46, -21

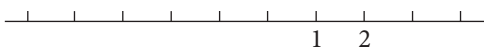
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2 Mark the position of the given integer on the given number line:

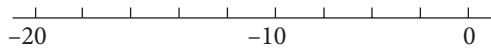
a -2



b -3



c -16



3 This table shows the temperature, in °C, at four-hourly intervals on one day.

Time	1 am	5 am	9 am	1 pm	5 pm	9 pm
Temp.	-6	-9	-2	8	4	1

a At what time was the temperature coldest?

.....

b What was the warmest temperature?

.....

c In what four-hour interval did the biggest change in temperature occur and what was that change?

.....

.....

.....

4 Determine the final temperature if it was:

a -2°C and it rose 5°

.....

b 7°C and it fell 10°

.....

c -9°C and rose 4°

.....

5 Describe the change in temperature (Did it rise or fall and by how many degrees?) if it was:

a 4°C and is now -4°C

.....

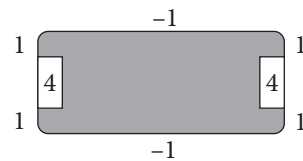
b -7°C and is now -5°C

.....

c -6°C and is now -11°C

.....

6 In a game of Soccitome players score four points for a goal and one point for a backline pass, but lose a point for a sideline cross.



a In one game Ned scored a goal, two backline passes and three sideline crosses. What was Ned's score for the game?

.....

b Pia scored a backline pass and two sideline crosses. What was Pia's score?

.....

c Honey finished with a score of -1 . If she scored at least one goal, what else might she have scored?

.....

.....

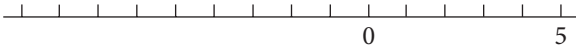
2 Integers

1 Arrange these integers in ascending order:

-23, -5, 3, 46, -81, 0, -4

.....

2 Show the position of the integers -8, -3, 4 and -1 on the number line below:



3 Are the following true or false?

a $-3 > -2$

b $-5 < -6$

c $3 < -4$

d $7 > -8$

4 Find:

a $-3 + 7$

b $-24 - 16$

c $38 - 49$

d $9 - -3$

e $-7 + -12$

f $-16 - -5$

g $-13 + -4$

h $40 - -60$

i $-15 + 8$

j $-21 - -29$

5 The temperature in a freezer was -11°C and the temperature in a refrigerator was 3°C . What is the difference in temperature between the fridge and freezer?

.....

6 The table shows the temperature at 6 am on one day in three different towns.

Town	Bathurst	Tamworth	Lismore
Temp.	-8°C	-2°C	9°C

a How much greater was the temperature in Lismore than in Bathurst?

.....

b What was the difference in temperature between Bathurst and Tamworth?

.....

c At 2 pm the temperature in Tamworth was 20° warmer than it was at 6 am. What was the temperature in Tamworth at 2 pm?

.....

d By 9 am the temperature in Bathurst had increased to 1°C . By how many degrees had the temperature increased?

.....

7 Jock has a bank account with a balance of $-\$783$.

a If Jock puts $\$215$ into the account, what will the new balance be?

.....

b If, instead, Jock withdraws $\$215$, what will the new balance be?

.....

8 At the end of June, Henrietta had a bank account with a balance of $-\$1237$. At the end of July the bank account balance was $-\$849$. Briefly describe the change in the balance.

.....

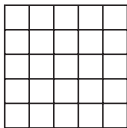
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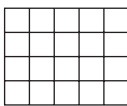
1 Equivalent Fractions

1 Shade the given amount:

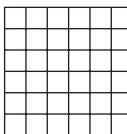
a $\frac{1}{5}$



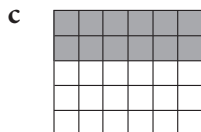
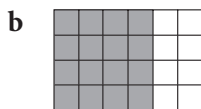
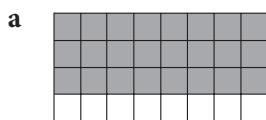
b $\frac{3}{10}$



c $\frac{1}{4}$

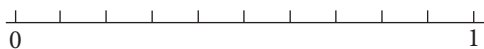


2 Give three equivalent fractions for each of the shaded amounts below:

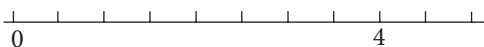


3 Show the position of each fraction on the number line provided:

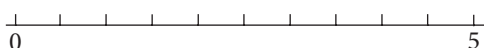
a $\frac{3}{5}$



b $1\frac{1}{2}$



c $3\frac{1}{4}$



4 Complete:

a $\frac{1}{2} = \frac{\quad}{4} = \frac{\quad}{8}$

b $\frac{8}{12} = \frac{\quad}{6} = \frac{\quad}{3}$

c $\frac{40}{100} = \frac{4}{\quad} = \frac{2}{\quad}$

d $\frac{3}{5} = \frac{\quad}{10} = \frac{15}{\quad}$

5 Write in simplest form:

a $\frac{60}{100}$

b $\frac{9}{12}$

c $\frac{18}{20}$

6 Write as mixed numerals in simplest form:

a $\frac{19}{5}$

b $\frac{28}{3}$

c $\frac{68}{8}$

7 Write as improper fractions:

a $1\frac{2}{5}$

b $2\frac{1}{4}$

c $3\frac{5}{6}$

8 Write in order from lowest to highest:

a $\frac{1}{2}, 1\frac{1}{4}, \frac{5}{8}, 1\frac{3}{8}$

b $\frac{5}{12}, \frac{2}{3}, \frac{7}{12}, \frac{5}{6}, \frac{1}{12}$

1 Find:

a $\frac{1}{2}$ of 32

b $\frac{1}{4}$ of 52

c $\frac{1}{5}$ of 750

d $\frac{1}{8}$ of 14 400

2 Find:

a $\frac{3}{4}$ of 48

b $\frac{2}{3}$ of 96

c $\frac{9}{10}$ of 1300

d $\frac{5}{8}$ of 1544

3 There are 312 people at a play and $\frac{1}{6}$ of those are children. How many children are at the play?
.....

4 There are 120 pets entered in a pet show. Two-thirds of all the pets entered are dogs.

a How many dogs are entered in the show?
.....

b One-quarter of the pets are cats. How many pets in the show are neither cats nor dogs?
.....
.....

5 a One hundred and twenty males were surveyed and it was found that $\frac{3}{5}$ had a driving licence. How many people was that?
.....

b One hundred and twenty females were also surveyed and $\frac{5}{8}$ of those had a driver's licence. In total, how many of all the people surveyed had a licence?
.....
.....

c Also, $\frac{1}{6}$ of those surveyed held a learner's permit. How many people was that?
.....

d Two-sevenths of those with a licence had green Ps. How many of those surveyed had green Ps?
.....

e One-third of those with a licence had red Ps. How many more drivers had red Ps than green Ps?
.....
.....

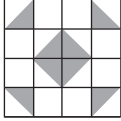
6 At the beginning of 2015 the population of Australia was about 23 626 000. The population of Queensland was about $\frac{1}{5}$ of Australia's population.

a What was the approximate population of Queensland at that time?
.....

b The population of Victoria was about $\frac{1}{4}$ of Australia's population. About how many more people lived in Victoria than in Queensland?
.....
.....

2 Working with Fractions

1 What fraction is shaded?



2 Write in simplest form:

a $\frac{16}{96}$

b $\frac{187}{550}$

c $\frac{234}{432}$

d $\frac{1\frac{1}{2}}{3}$

3 Write as improper fractions:

a $2\frac{1}{20}$

b $4\frac{5}{7}$

c $6\frac{2}{9}$

d $12\frac{11}{15}$

4 Write as mixed numerals in simplest form:

a $\frac{45}{7}$

b $\frac{69}{9}$

c $\frac{60}{25}$

d $\frac{720}{100}$

5 How many quarters are in $3\frac{1}{4}$?

.....

6 Are these statements true or false?

a $\frac{1}{6} < \frac{1}{8}$

b $\frac{2}{5} > \frac{3}{7}$

c $\frac{7}{12} > \frac{3}{5}$

.....

7 Arrange these fractions in increasing order:

$\frac{3}{4}, \frac{4}{5}, \frac{5}{6}, \frac{7}{10}, \frac{11}{15}, \frac{17}{20}, \frac{23}{30}$

.....

.....

8 Yesterday, the television was running for exactly $4\frac{1}{2}$ hours. What fraction of the day, in simplest form, is that?

.....

9 A drink is made by mixing 3 L of lemonade, 1 L of orange juice, 2 L of ginger beer, 1 L of pineapple juice and $\frac{1}{2}$ L of apple juice.

a What fraction is lemonade?

.....

b What fraction is apple juice?

.....

c What fraction is fruit juice?

.....

Adding and Subtracting Fractions

1 Find, giving the answer in simplest form:

a $\frac{1}{5} + \frac{3}{5}$

b $\frac{7}{12} + \frac{5}{12}$

c $3\frac{3}{10} - \frac{1}{10}$

d $\frac{3}{8} + \frac{1}{4}$

e $\frac{1}{3} - \frac{1}{6}$

f $\frac{7}{10} + \frac{2}{5}$

g $6 + 1\frac{5}{8}$

h $4 - \frac{3}{4}$

i $1\frac{2}{5} - \frac{3}{5}$

j $\frac{1}{2} + 2\frac{1}{8}$

k $1\frac{1}{2} + 3\frac{3}{4}$

l $4\frac{2}{5} - 1\frac{9}{10}$

2 Find the sum of $2\frac{3}{4}$, $1\frac{1}{2}$ and $1\frac{5}{8}$.

.....

3 Find the difference between $9\frac{2}{3}$ and $5\frac{5}{6}$.

.....

4 Find, giving the answer in simplest form:

a $3\frac{1}{2} - 2\frac{3}{8} - 1\frac{1}{8}$

b $3\frac{1}{6} + 1\frac{2}{3} - \frac{5}{6}$

5 These are the hours Brad worked each day last week.

Mon.	Tue.	Wed.	Thu.	Fri.
$7\frac{3}{4}$	$7\frac{1}{2}$	8	$9\frac{1}{4}$	$5\frac{3}{4}$

a How many hours did Brad work in total last week?

.....

b How many more hours did he work than the standard 35 hours?

.....

c Any time over $7\frac{1}{2}$ hours per day is paid as overtime. How many hours of overtime did Brad work on Thursday?

.....

d How many hours overtime was Brad paid for last week?

.....

6 Bill has $17\frac{1}{4}$ ha of land divided into three paddocks.

a One paddock is $8\frac{1}{2}$ ha and another is $5\frac{3}{4}$ ha. What is the total area of those two paddocks?

.....

b What is the size of the third paddock?

.....

c Bill buys an adjoining paddock bringing the total size to 25 ha. How big is the paddock that Bill bought?

.....

d What is the difference in area between the largest paddock and the new paddock?

.....

Adding and Subtracting Fractions

1 Find, giving the answer in simplest form:

a $\frac{3}{5} + \frac{1}{4}$

b $\frac{3}{4} - \frac{7}{10}$

c $3\frac{4}{5} + \frac{2}{3}$

d $7\frac{5}{8} - 2\frac{1}{6}$

2 Find:

a $1\frac{1}{3} + 2\frac{1}{4} + 3\frac{1}{5}$
.....

b $9\frac{1}{5} + 2\frac{2}{3} - 3\frac{7}{8}$
.....

c $4\frac{3}{4} - 2\frac{7}{8} - 1\frac{1}{3}$
.....

d $7\frac{1}{2} - 3\frac{4}{5} + 2\frac{1}{4}$
.....

3 What fraction can be subtracted from $1\frac{1}{2}$ to leave $\frac{7}{8}$?

.....

4 What fraction can be added to $\frac{3}{5}$ to give $\frac{3}{4}$?

.....

5 Jon eats $\frac{2}{5}$ of a chocolate bar, Jill eats $\frac{1}{4}$ of the bar and Jack eats the rest. What fraction of the chocolate bar does Jack eat?

.....

.....

6 A recipe for a cream pie uses $\frac{1}{4}$ cup of castor sugar and $\frac{2}{3}$ cup of brown sugar. How much sugar is used in the pie?

.....

7 A pattern for a dress uses $3\frac{1}{2}$ m of material.

a Dinah has $4\frac{1}{3}$ m of fabric. How much extra fabric does she have?

.....

b Dinah also has a pattern for a jacket that uses $2\frac{5}{8}$ m. How much material does Dinah need to make both the dress and the jacket from the same fabric?

.....

8 A survey was taken to see how students travelled to school. It was found that $\frac{1}{4}$ of the students walked, $\frac{3}{8}$ came by bus, $\frac{1}{6}$ came by train and $\frac{1}{12}$ came by car. The rest of the students rode their bikes. What fraction of the students rode a bicycle to school?

.....

.....

9 Lee picked $5\frac{1}{2}$ boxes of fruit on Monday, $2\frac{2}{3}$ boxes on Tuesday and $3\frac{5}{6}$ boxes on Wednesday.

a How many boxes did Lee pick altogether?

.....

b How many fewer boxes did Lee pick on Monday than on Tuesday and Wednesday combined?

.....

.....

1 Find:

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

b $\frac{1}{6} \times 4$

c $\frac{5}{8} \times 1\frac{1}{8}$

d $3\frac{2}{3} \times 4\frac{1}{3}$

e $12\frac{3}{5} \times 7\frac{3}{4}$

2 Find:

a $\frac{3}{4} \div \frac{1}{4}$

b $4\frac{2}{3} \div 1\frac{1}{2}$

c $\frac{7}{8} \div 2\frac{2}{3}$

d $10\frac{3}{5} \div 5\frac{7}{10}$

3 Jim makes and sells toy boats. He uses $3\frac{1}{3}$ tins of paint to paint 20 boats.

a How much paint does Jim use on each boat?

.....

b How much paint will Jim need to paint 12 boats?

.....

4 Together, Mandy's dogs eat $2\frac{1}{2}$ cans of dog food every day.

a How many cans do they eat in a week?

.....

b A carton contains 30 of the cans. How many days will a carton last?

.....

5 Two-thirds of the students at a school brought a pet to school on Pet Day. Of those, $\frac{5}{8}$ brought a dog.

a What fraction of the students at the school brought a dog to Pet Day?

.....

b Of those who did not bring a pet to school, $\frac{1}{4}$ own a pet. What fraction of the students do not own a pet?

.....

6 This is a list of ingredients Ed uses to make 12 scones.

2 cups self-raising flour $\frac{1}{2}$ cup milk
1 egg $\frac{1}{2}$ cup cream 2 teaspoons sugar

a How much milk should Ed use to make 60 scones?

.....

b Ed uses $3\frac{1}{2}$ cups of cream when making a batch of scones. How many eggs should Ed use?

.....

7 In an exam, Liz completed $7\frac{1}{2}$ questions in $\frac{3}{4}$ of an hour.

a What fraction of an hour did Liz spend on each question on average?

.....

b At that rate how many questions will Liz complete in the total exam time of $2\frac{1}{2}$ hours?

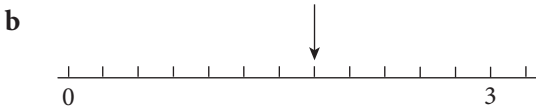
.....

1 Mixed Fractions

- 1 Write three equivalent fractions for the amount shaded in this diagram:



- 2 What fraction is found at the position on the number line marked by the arrow?



- 3 Find:

- a $\frac{1}{3}$ of 51 _____
- b $\frac{3}{4}$ of 92 _____
- c $\frac{7}{8}$ of 5608 _____

- 4 Write $\frac{34}{4}$ as a mixed numeral in simplest form.
- _____

- 5 Find, giving the answer in simplest form:

- a $\frac{3}{5} + \frac{9}{10}$ _____
- b $\frac{5}{6} - \frac{2}{3}$ _____
- c $1\frac{1}{2} + 3\frac{1}{10}$ _____
- d $3\frac{1}{8} - \frac{1}{4}$ _____

- 6 Which is larger: $\frac{5}{8}$ or $\frac{7}{12}$?
- _____

- 7 Riley mowed the lawn for $1\frac{3}{4}$ hours on Friday and $2\frac{1}{2}$ hours on Saturday.

- a How long was Riley mowing altogether?
- _____

- b How much longer did Riley mow on Saturday than on Friday?
- _____

- 8 There are 960 students enrolled at a school. Last Monday, $\frac{3}{10}$ of the students were absent. How many students were present last Monday?
- _____

- 9 Twenty-seven thousand, six hundred people live in Summerton. Of these, $\frac{1}{6}$ live in the north, $\frac{1}{12}$ in the south, $\frac{1}{3}$ in the east and $\frac{1}{4}$ in the centre. The remaining people live in the west.

- a What fraction of the people live in the west of Summerton?
- _____

- b How many people live in the west of Summerton?
- _____

- c How many more people live in the centre than in the south of Summerton?
- _____

1 Find:

a $\frac{1}{8}$ of 728

b $\frac{2}{3}$ of 456

c $\frac{4}{7}$ of 623

2 Find, giving the answer in simplest form:

a $\frac{5}{12} + \frac{8}{15}$

b $\frac{5}{6} - \frac{7}{10}$

c $2\frac{1}{3} + 4\frac{3}{5}$

d $5\frac{3}{8} - \frac{11}{12}$

3 Simplify:

a $\frac{3}{5} \times \frac{7}{10}$

b $\frac{7}{8} \times \frac{12}{21}$

c $3\frac{2}{7} \times 1\frac{3}{4}$

d $\frac{2}{3} \div \frac{6}{7}$

e $1\frac{3}{4} \div 4$

f $2\frac{4}{5} \div 1\frac{1}{3}$

4 Arrange the fractions $\frac{13}{15}$, $\frac{17}{20}$, $\frac{9}{10}$ and $\frac{5}{6}$ in order from smallest to largest.
.....
.....

5 What fraction, in simplest form, is 28 hours out of a week?
.....
.....

6 One hundred and twenty-eight people worked at a factory and $\frac{5}{8}$ of those workers were born overseas.

a How many workers were born overseas?
.....

b An additional 52 workers are employed at the factory. The fraction of all workers born overseas is now $\frac{2}{3}$. How many of the additional workers were born overseas?
.....
.....

7 Harley ate one-third of a pizza and his four friends are going to share the remainder.

a What fraction of the whole pizza will each of the four friends get?
.....

b What fraction of the amount Harley ate is that?
.....

8 Gianna spent $3\frac{3}{4}$ hours studying for a science test and $\frac{2}{3}$ of that amount of time studying for a history test.

a How many hours did Gianna study for the history test?
.....

b How many more hours did she spend studying for the science test than the history test?
.....

c What is the average amount of time she spent on each test?
.....
.....

Introduction to Decimals

1 Write each of these as decimals:

a $\frac{7}{10}$

b $\frac{3}{100}$

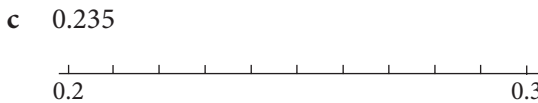
c $\frac{9}{1000}$

d $\frac{41}{100}$

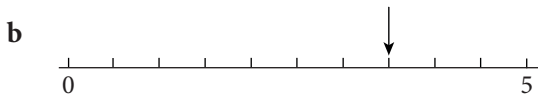
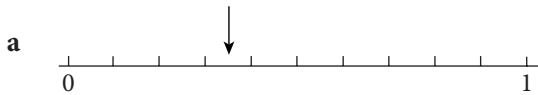
e $\frac{139}{1000}$

f $\frac{57}{1000}$

2 Show the position of the decimal on the number line.



3 Write the decimal found at the position on the number line indicated by the arrow.



4 What is the place value of each of the digits in the number 12.345?

a 1

b 2

c 3

d 4

e 5

5 Which is larger?

a 0.8 or 0.009
.....

b 0.2 or 0.13
.....

6 Which of these is the odd one out?

0.21 0.2100 0.201 0.210

Give a reason for your answer.
.....
.....
.....

7 Put these in order from smallest to largest:

0.03 0.105 0.008 0.26 0.1 0.027

.....
.....

8 Round to the nearest whole number:

a 3.2

b 15.7

c 28.5

d 14.62

e 29.99

Adding and Subtracting Decimals

1 Find, giving the answer as a decimal:

a $\frac{1}{10} + \frac{1}{100}$

.....

b $\frac{7}{10} + \frac{3}{1000}$

.....

c $\frac{9}{100} + \frac{3}{10}$

.....

2 Find:

a $0.27 + 11.658 + 2.4$

.....

b $58.237 + 14.654 + 22.1 + 0.095$

.....

c $19.3 - 5.78$

.....

d $3.625 - 1.47 + 5$

.....

e $11.237 - 5.46 - 4.9$

.....

3 Find the sum of 0.6 and 0.48.

.....

4 Find the difference between 16.837 and 2.14.

.....

5 Subtract 3.4 from the sum of 7.25 and 9.65.

.....

.....

6 What number is added to 3.2 to give 3.25?

.....

7 How much taller is a building that is 12.3 m high than one that is 6.7 m high?

.....

8 Mick has a timber plank that is 1.65 m long.

a If Mick cuts a piece of length 0.7 m from his plank, what length will remain?

.....

b How much longer would the plank need to be if, instead, Mick wanted to cut it into two pieces, one 0.9 m long and the other 0.8 m?

.....

9 Three bags contain different amounts of flour as shown in the diagram.



a How many kilograms lighter is Bag A than Bag B?

.....

b What is the total weight in kilograms of all three bags?

.....

c How much heavier is Bag C than Bags A and B combined?

.....

.....

Worked Solutions

Factors, Multiples, Prime and Composite Numbers

Level 1 (page 1)

- 9, 18, 27, 36, 45, 54
 $9 \times 1 = 9$, $9 \times 2 = 18$, $9 \times 3 = 27$,
 $9 \times 4 = 36$, $9 \times 5 = 45$
 and $9 \times 6 = 54$
 So the first six multiples of 9 are
 9, 18, 27, 36, 45 and 54.
 - 13, 26, 39, 52, 65, 78
 - 28, 56, 84, 112, 140, 168
- 1, 2, 4, 7, 14, 28
 - 1, 59
 - 1, 2, 3, 4, 6, 8, 12, 18, 24, 36, 48,
72, 144
- 2, 7
 Of 1, 2, 4, 7, 14 and 28 only 2 and
 7 are prime.
 - 2, 3
- yes
 $6681 \div 17 = 393$
 - no
 $15349 \div 17 = 902.88235\dots$
 - yes
 $97104 \div 17 = 5712$
 - yes
 $1419857 \div 17 = 83521$
 - yes
 $1184832 \div 17 = 69696$
- 1001
 $1000 \div 7 = 142\frac{6}{7}$
 So 1000 + 1 will be divisible by 7.
- 1482
 $1475 \div 19 = 77\frac{12}{19}$
 So 1475 + 7 = 1482 will be divisible
 by 19.
- [72 74 76 78 80 82 84 86 88 90
92 94 96 98 should all be
crossed out.]
 - [75 81 87 93 99 should be
crossed out.]
 - All multiples of 4 are even and
all the even numbers are crossed
out.
 - [77 85 91 95 should be crossed
out.]
 - If 11 divides into one of these
numbers it does so less than
11 times, so any multiple of 11,
or any higher number, should
already be crossed out.
 - 71, 73, 79, 83, 89, 97
- prime
 - composite
 $203 = 7 \times 29$
 - prime
 - composite
 $927 = 3 \times 309 = 9 \times 103$

- $2 \times 2 \times 2 \times 3 \times 37$
 $888 = 8 \times 111$
 $= 2 \times 2 \times 2 \times 3 \times 37$
 - $5 \times 29 \times 47$
 $6815 = 5 \times 1363$
 $= 5 \times 29 \times 47$

Adding and Subtracting

Level 1 (page 2)

- 239 680
 $8756 + 230924 = 239680$
- 408 926
 $468213 - 59287 = 408926$
- 12 284
 $3076 + 9208 = 12284$
- 14 260 000
 $13000000 + 1260000 = 14260000$
- 6 035 250
 $12000000 - 5964750 = 6035250$
- 1879 km
 Distance travelled = (129 461
 $- 127582$) km
 $= 1879$ km
 - 129 648 km
 Odometer reading = (129 461
 $+ 187$) km
 $= 129648$ km
 - 315 km
 Distance home = (131 842
 $- 129648)$ km
 $= 2194$ km
 Extra distance = (2194 - 1879) km
 $= 315$ km
- 543
 Total = 257 + 152 + 134 = 543
 So there are 543 cows altogether.
 - 9
 Difference = 152 - 134 = 18
 If half of these are moved the
 numbers will be the same.
 Now $18 \div 2 = 9$
 So 9 cows should be moved.

8.

County	Area (km ²)
Devon	6707
Dorset	2653
Durham	2721
Norfolk	5372
Suffolk	3798
Surrey	1663

- 68 km²
 Difference in area = (2721
 $- 2653)$ km²
 $= 68$ km²

- 5044 km²
 Difference = (6707 - 1663) km²
 $= 5044$ km²
 So the area of Devon is 5044 km²
 greater than that of Surrey.
- 9170 km²
 Total area = (5372 + 3798) km²
 $= 9170$ km²
- Dorset and Durham
 $2653 + 2721 = 5374$
 So, together Dorset and Durham
 have an area almost the same as
 that of Norfolk.

Multiplication and Division

Level 1 (page 3)

- 851
 $37 \times 23 = 851$
- 67
 $8375 \div 125 = 67$
- 1
 $876 \div 7 = 125\frac{1}{7}$
 So the remainder is 1.
- 209
 $\frac{627 \times 48}{18 \times 8} = \frac{30096}{144} = 209$
 - 1
 $\frac{672 \div 3}{7 \times 32} = \frac{224}{224} = 1$
- 299 r 14
 $9283 \div 31 = 299\frac{14}{31} = 299$ r 14
- 91
 $2457 \div 27 = 91$
 So $27 \times 91 = 2457$
 - 15
 $6945 \div 463 = 15$
 So $6945 \div 15 = 463$
 - 3901
 $47 \times 83 = 3901$
 So $3901 \div 83 = 47$
- \$570
 Total to pay = $15 \times \$38 = \570
 - 9
 Number of posts = $\$342 \div \$38 = 9$
- 90
 Number of cars = $5 \times 18 = 90$
 - 15
 Cars in each row = $90 \div 6 = 15$
 - 7
 New number of cars = $90 + 8 = 98$
 Number of rows = $98 \div 14 = 7$
- \$108
 Cost per person = $\$540 \div 5 = \108
 - \$18
 New cost per person = $\$540 \div 6$
 $= \$90$
 Difference = $\$108 - \$90 = \$18$
 So each person will pay \$18 less.

- c **\$15**
 $7 \times \$75 = \525
 Difference = $\$540 - \$525 = \$15$
 So another \$15 will be needed.

10. a **120**
 Number of boxes = $5 \times 3 \times 8 = 120$
 b **151 200**
 Number of pens = $120 \times 210 \times 6 = 151\,200$

Mixed Operations

Level 1 (page 4)

1. a **146 344**
 b **3 470 255**
 c **330 111 152**
 d **32 089**
2. a **22**
 $\frac{37+4869}{2975-2752} = \frac{4906}{223} = 22$
 b **30**
 $57 \times 34 \div 19 + 29 - 101 = 1938 \div 19 + 29 - 101 = 102 + 29 - 101 = 131 - 101 = 30$
3. **37**
 $10\,767 \div 291 = 37$
4. **5**
 $56 \div 17 = 3 \frac{5}{17}$
 The remainder is 5.
5. a **14**
 Number of boxes = $524 \div 40 = 13.1$
 So 14 boxes will be needed.
 [The answer is closer to 13 than 14, but 13 boxes will not be enough.]
 b **36**
 Number of apples in 14 boxes = $14 \times 40 = 560$
 Now $560 - 524 = 36$
 So 36 more apples will be needed.
6. a **\$260**
 Price per policy = $\$6500 \div 25 = \260
 b **\$9100**
 Total pay = $35 \times \$260 = \9100
 c **19**
 Number of policies = $\$4940 \div \$260 = 19$
7. a **59**
 Difference = $243 - 184 = 59$
 b **1064**
 Total = $212 + 197 + 243 + 228 + 184 = 1064$
 c **173**
 Number present = $212 - 39 = 173$
 d **\$2955**
 Total raised = $197 \times \$15 = \2955

- e **\$11 less**
 Total = $184 \times \$16 = \2944
 Difference = $\$2955 - \$2944 = \$11$
 So Year 10 would raise \$11 less than Year 7.

Mixed Operations

Level 2 (page 5)

1.

Rosie's expenses (\$)			
Expense	April	May	June
Admin.	53	97	168
Advert.	612	127	
Energy	1013	1135	1194
Materials	2375	4865	3922
Rent	590	590	590
Other	471	1236	828

- a **\$5114**
 Total for April = $\$(53 + 612 + 1013 + 2375 + 590 + 471) = \5114
- b **\$3342**
 Total energy expense = $\$(1013 + 1135 + 1194) = \3342
- c **\$943**
 Difference = $\$(4865 - 3922) = \943
- d **\$319**
 Total of other expenses for June = $\$(168 + 1194 + 3922 + 590 + 828) = \6702
 Difference = $\$7021 - \$6702 = \$319$
 The missing amount was \$319.
- e **\$18**
 Admin. expenses for April and May = $\$53 + \$97 = \$150$
 Difference = $\$168 - \$150 = \$18$
 So \$18 more was spent in June.
- f **May, \$2936**
 Total of expenses for May = $\$(97 + 127 + 1135 + 4865 + 590 + 1236) = \8050
 So, May had the greatest total expenses and April had the least.
 Difference = $\$8050 - \$5114 = \$2936$
- g **\$845**
 Total other expenses = $\$471 + \$1236 + \$828 = \2535
 Average = $\$2535 \div 3 = \845
- h **\$7080**
 The rent is \$590 each month.
 Rent for a year = $12 \times \$590 = \7080
2. **278**
 Sum = $527 + 139 = 666$
 Difference = $527 - 139 = 388$
 Now $666 - 388 = 278$

So the sum is greater than the difference by 278.

3. a **106 521**
 $203\,725 - 97\,204 = 106\,521$
 So $97\,204 + 106\,521 = 203\,725$
 b **36 746**
 $18\,472 + 18\,274 = 36\,746$
 So $36\,746 - 18\,274 = 18\,472$
 c **74**
 $49\,728 \div 672 = 74$
 So $672 \times 74 = 49\,728$
 d **8649**
 $93 \times 93 = 8649$
 So $8649 \div 93 = 93$
 e **8083**
 $15\,860 - 7777 = 8083$
 So $15\,860 - 8083 = 7777$
 f **31**
 $2976 \div 96 = 31$
 So $2976 \div 31 = 96$
4. **\$4.85**
 Cost of 24 single cans = $24 \times \$2.70 = \64.80
 Difference = $\$64.80 - \$59.95 = \$4.85$
5. a **4 600 000**
 Population of New Zealand $\approx 1\,270\,000\,000 \div 276 \approx 4\,600\,000$
 b **64 400 000**
 Population of France $\approx 14 \times 4\,600\,000 \approx 64\,400\,000$

Order of Operations

Level 1 (page 6)

[Note: most calculators follow the correct order of operations so, if that is the case, the whole question can be entered into the calculator and the answer found without needing to work out any middle steps.]

1. a **39**
 $15 + 6 \times 4 = 15 + 24 = 39$
 b **30**
 $32 - 19 + 17 = 13 + 17 = 30$
 c **8**
 $25 \div 5 + 3 = 5 + 3 = 8$
 d **130**
 $132 - 24 \div 12 = 132 - 2 = 130$
 e **84**
 $42 + 17 \times 3 - 9 = 42 + 51 - 9 = 93 - 9 = 84$
 f **232**
 $19 \times 8 + 16 \times 5 = 152 + 80 = 232$
 g **52**
 $48 - 18 \div 3 + 2 \times 5 = 48 - 6 + 10 = 52$
 h **20**
 $63 \div 7 + 121 \div 11 = 9 + 11 = 20$

2. a 25
 $(19 + 56) \div 3 = 75 \div 3 = 25$
 b 39
 $1053 \div (17 + 10) = 1053 \div 27 = 39$
 c 29 241
 $(93 + 78) \times (104 + 67) = 171 \times 171 = 29\ 241$
 d 15 631
 $29 \times (32 + 17) \times 11 = 29 \times 49 \times 11 = 15\ 631$
 e 44
 $58 - (2 + 3 \times 4) = 58 - (2 + 12) = 58 - 14 = 44$
 f 363
 $(425 - 128) \div 9 \times 11 = 297 \div 9 \times 11 = 33 \times 11 = 363$
3. a 61
 $[(24 + 13) \times 18 + 5] \div 11 = [37 \times 18 + 5] \div 11 = 671 \div 11 = 61$
 b 254
 $56 + 2 \times [178 - (3 \times 24 + 7)] = 56 + 2 \times [178 - 79] = 56 + 2 \times 99 = 56 + 198 = 254$
 c 11
 $[(19 + 2) \times 17 - 5] \div 32 = [21 \times 17 - 5] \div 32 = 352 \div 32 = 11$
 d 26
 $78 \div [(15 - 3) \div 4] = 78 \div [12 \div 4] = 78 \div 3 = 26$
 e 59
 $\{13 + [12 \times (9 + 14) + 6]\} \div 5 = \{13 + [12 \times 23 + 6]\} \div 5 = \{13 + 282\} \div 5 = 295 \div 5 = 59$
 f 1280
 $\{83 - [(7 \times 2 + 6) - 11] \div 3\} \times 16 = \{83 - [20 - 11] \div 3\} \times 16 = \{83 - 9 \div 3\} \times 16 = 80 \times 16 = 1280$
4. No, the correct answer should be 802. Carly added the numbers first and then multiplied instead of doing the multiplication first.
5. a $13 + (25 - 19) \times 3 = 31$
 b $57 \div (5 \times 3 + 4) = 3$
 c $(296 - 101) \div (5 + 8) = 15$
 d $26 \times (15 + 32) \div 13 = 94$
 e $(73 \times 14 - 70) \div 17 = 56$
 f $16 + 8 \times 3 - (26 + 14) = 0$
 g $((9 + 5) \times 3 - 2 + 8) \div 4 = 12$
 h $((9 + 39) \times 4 + 192) \div (12 \times 32) = 1$

Squares, Square Roots, Cubes and Cube Roots

Level 2 (page 7)

1. a 3249
 b 33 489
 c 6 130 576
 d 940 955 625
2. a 29
 b 83
 c 123
 d 3473
3. a 23
 $\sqrt{64} + \sqrt{225} = 8 + 15 = 23$
 b 17
 $\sqrt{64 + 225} = \sqrt{289} = 17$
 c 2
 $\sqrt{1369} - \sqrt{1225} = 37 - 35 = 2$
 d 12
 $\sqrt{1369 - 1225} = \sqrt{144} = 12$
 e 63
 $\sqrt{81} \times \sqrt{49} = 9 \times 7 = 63$
 f 63
 $\sqrt{81 \times 49} = \sqrt{3969} = 63$
 g 12
 $\frac{\sqrt{2304}}{\sqrt{16}} = \frac{48}{4} = 12$
 h 12
 $\sqrt{\frac{2304}{16}} = \sqrt{144} = 12$
 i 1
 $\sqrt{\frac{785^2 - 783^2}{56^2}} = \sqrt{\frac{3136}{3136}} = \sqrt{1} = 1$
 j 2
 $\frac{\sqrt{1024 + 22^2}}{14^2 + \sqrt{3844}} = \frac{32 + 484}{196 + 62} = \frac{516}{258} = 2$
4. a 343
 b 68 921
 c 178 453 547
 d 1 879 080 904
5. a 11
 b 28
 c 303
 d 600
6. 68
 $\sqrt{4583} = 67.6978\dots$
 The nearest whole number is 68.
7. 18 and 19
 $\sqrt{351} = 18.7349\dots$
 So it lies between 18 and 19.
8. 23
 $\sqrt{520} = 22.8035\dots$ and $\sqrt{530} = 23.0217\dots$
 So 23^2 lies between 520 and 530
 $(23^2 = 529)$

9. 1849

$$\sqrt{1765} = 42.0119\dots \text{ and}$$

$$\sqrt{1935} = 43.988\dots$$

So 43^2 will lie between 1765 and 1935.
 $43^2 = 1849$

10. 59 319

$$\sqrt[3]{54\ 950} = 38.0179\dots \text{ and}$$

$$\sqrt[3]{63\ 950} = 39.9895\dots$$

So 39^3 lies between 54 950 and 63 950.
 $39^3 = 59\ 319$

Indices

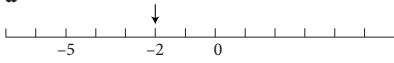
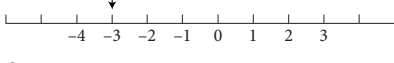
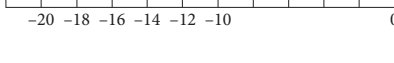
Level 2 (page 8)

1. a 64
 b 19 683
 c 78 125
 d 5832
 e 1 500 625
 f 2 535 525 376
2. a 5
 $3^5 = 243$
 b 2
 $2^7 = 128$
 c 11
 $8^{11} = 8\ 589\ 934\ 592$
 d 4
 $4^{13} = 67\ 108\ 864$
3. a 5000
 b 35 721
 c 4 348 377
 d 700 000 000
4. a true
 $2^5 \times 3^5 = 32 \times 243 = 7776 = 6^5$
 b true
 $4^8 = 65\ 536 = 2^{16}$
 c false
 $3^4 \times 3^2 = 81 \times 9 = 729$
 $3^8 = 6561$
 d false
 $5^6 + 2^4 = 15\ 625 + 16 = 15\ 641$
 $7^{10} = 282\ 475\ 249$
 e false
 $7^9 \div 7^3 = 40\ 353\ 607 \div 343 = 117\ 649$
 $7^3 = 343$
 f true
 $2^{12} \times 2^{10} = 4096 \times 1024 = 4\ 194\ 304 = 2^{22}$
 g false
 $3^6 \times 5^2 = 729 \times 25 = 18\ 225$
 $15^8 = 2\ 562\ 890\ 625$
 h true
 $5^4 \times 2^4 = 625 \times 16 = 10\ 000 = 10^4$
5. a 2400
 $3 \times 2^5 \times 5^2 = 3 \times 32 \times 25 = 2400$

- b 40 500**
 $2^2 \times 3^4 \times 5^3 = 4 \times 81 \times 125 = 40\,500$
- c 100**
 $6^2 + 8^2 = 36 + 64 = 100$
- d 36**
 $2^3 + 7 \times 2^2 = 8 + 7 \times 4 = 8 + 28 = 36$
- 6. 126 = 2 × 63**
 $= 2 \times 3 \times 21$
 $= 2 \times 3 \times 3 \times 7$
 So $126 = 2 \times 3^2 \times 7$
- 7. a 900 = 3 × 3 × 10 × 10**
 $= 3 \times 3 \times 2 \times 5 \times 2 \times 5$
- b $2^2 \times 3^2 \times 5^2$**
- 8. a $2^3 \times 7^2$**
 $392 = 2 \times 196$
 $= 2 \times 2 \times 98$
 $= 2 \times 2 \times 2 \times 49$
 $= 2 \times 2 \times 2 \times 7 \times 7$
 $= 2^3 \times 7^2$
- b $5^3 \times 11^2$**
 $15\,125 = 5 \times 3025$
 $= 5 \times 5 \times 605$
 $= 5 \times 5 \times 5 \times 121$
 $= 5 \times 5 \times 5 \times 11 \times 11$

Integers

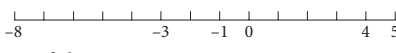
Level 1 (page 9)

- 1. a -9, -7, -5, -4, -2**
b -10, -6, -3, 0, 2, 5
c -46, -25, -21, -17
- 2. a**

- b**

- c**

- 3.**
- | Time | 1 am | 5 am | 9 am | 1 pm | 5 pm | 9 pm |
|-------|------|------|------|------|------|------|
| Temp. | -6 | -9 | -2 | 8 | 4 | 1 |
- a 5 am**
 The coldest temperature was -9°C at 5 am.
- b 8°C**
 The warmest temperature was 8°C at 1 pm.
- c From 9 am to 1 pm the temperature increased by 10°C .**
- 4. a 3°C**
 From -2° to 0° is a rise of 2° so 3° more is 3°C .
- b -3°C**
 From 7° to 0° is a fall of 7° so 3° more is -3°C .
- c -5°C**
 From -9° a rise of 4° is -5°C .

- 5. a Fell 8°**
 From 4° to 0° is a fall of 4° and it is another 4° to -4° . So altogether it is a fall of 8° .
- b Rose 2°**
 From -7° to -5° is a rise of 2° .
- c Fell 5°**
 From -6° to -11° is a fall of 5° .
- 6. a 3**
 Ned received 4, 1, 1, -1 , -1 and -1 points.
 He gained 6 points but lost 3 so ended up with 3 points.
- b -1**
 Pia received 1, -1 and -1 points.
 She gained 1 point but lost 2 so ended up with -1 point.
- c (A possible answer) 5 sideline crosses**
 Honey scored 4 points for the goal so, if she scored no more goals or backline passes, she must have lost 5 points. So she must have scored 5 sideline crosses.

Integers

Level 2 (page 10)

- 1. -81, -23, -5, -4, 0, 3, 46**
- 2.**

- 3. a false**
 -3 is smaller than -2 .
- b false**
 -5 is larger than -6 .
- c false**
 3 is larger than -4 .
- d true**
 7 is larger than -8 .
- 4. a 4**
 $-3 + 7 = 4$
- b -40**
 $-24 - 16 = -40$
- c -11**
 $38 - 49 = -11$
- d 12**
 $9 - -3 = 9 + 3 = 12$
- e -19**
 $-7 + -12 = -7 - 12 = -19$
- f -11**
 $-16 - -5 = -16 + 5 = -11$
- g -17**
 $-13 + -4 = -13 - 4 = -17$
- h 100**
 $40 - -60 = 40 + 60 = 100$
- i -7**
 $-15 + 8 = -7$
- j 8**
 $-21 - -29 = -21 + 29 = 8$

- 5. 14°**
 Difference = $(3 - -11)^\circ$
 $= (3 + 11)^\circ$
 $= 14^\circ$

6.

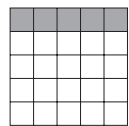
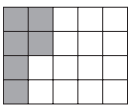
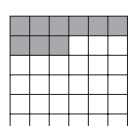
Town	Bathurst	Tamworth	Lismore
Temp.	-8°C	-2°C	9°C

- a 17°**
 Difference = $(9 - -8)^\circ$
 $= (9 + 8)^\circ$
 $= 17^\circ$
 The temperature in Lismore was 17° higher than that in Bathurst.
- b 6°**
 Difference = $(-2 - -8)^\circ$
 $= (-2 + 8)^\circ$
 $= 6^\circ$
- c 18°C**
 Temperature at 2 pm = $-2^\circ + 20^\circ$
 $= 18^\circ$
- d 9**
 Increase in degrees = $1 - -8$
 $= 1 + 8$
 $= 9$

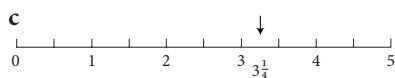
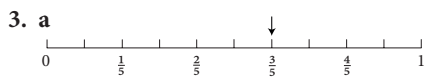
- 7. a $-\$568$**
 New balance = $-\$783 + \215
 $= -\$568$
- b $-\$998$**
 Balance = $-\$783 - \$215 = -\$998$
- 8. Increase of $\$388$**
 Change = $-\$849 - -\1237
 $= -\$849 + \1237
 $= \$388$
 Henrietta's bank balance had increased by $\$388$.

Equivalent Fractions

Level 1 (page 11)

- 1. a [5 of the 25 squares must be shaded.]**

- b [6 of the 20 squares must be shaded.]**

- c [9 of the 36 squares must be shaded.]**

- 2. [Possible answers given, any fractions equivalent to those given would be correct.]**
- a $\frac{3}{4}, \frac{6}{8}, \frac{24}{32}$**
- b $\frac{2}{3}, \frac{4}{6}, \frac{16}{24}$**

c $\frac{2}{5}, \frac{4}{10}, \frac{12}{30}$



4. a $\frac{1}{2} = \frac{2}{4} = \frac{4}{8}$

b $\frac{8}{12} = \frac{4}{6} = \frac{2}{3}$

c $\frac{40}{100} = \frac{4}{10} = \frac{2}{5}$

d $\frac{3}{5} = \frac{6}{10} = \frac{15}{25}$

5. a $\frac{3}{5}$

b $\frac{3}{4}$

c $\frac{9}{10}$

6. a $3\frac{4}{5}$

b $9\frac{1}{3}$

c $8\frac{1}{2}$

7. a $\frac{7}{5}$

b $\frac{9}{4}$

c $\frac{23}{6}$

8. a $\frac{1}{2}, \frac{5}{8}, 1\frac{1}{4}, 1\frac{3}{8}$

$\frac{1}{2} = \frac{4}{8}$ and $1\frac{1}{4} = 1\frac{2}{4} = 1\frac{4}{8}$

So, in increasing order, the

fractions are $\frac{4}{8}, \frac{5}{8}, 1\frac{2}{8}$ and $1\frac{3}{8}$

or $\frac{1}{2}, \frac{5}{8}, 1\frac{1}{4}, 1\frac{3}{8}$.

b $\frac{1}{12}, \frac{5}{12}, \frac{7}{12}, \frac{2}{3}, \frac{5}{6}$

$\frac{2}{3} = \frac{8}{12}$ and $\frac{5}{6} = \frac{10}{12}$

So, in increasing order, the

fractions are $\frac{1}{12}, \frac{5}{12}, \frac{7}{12}, \frac{8}{12}$ and $\frac{10}{12}$

or $\frac{1}{12}, \frac{5}{12}, \frac{7}{12}, \frac{2}{3}$ and $\frac{5}{6}$.

Fractions of Amounts

Level 1 (page 12)

1. a 16

$\frac{1}{2} \times 32 = 16$

b 13

$\frac{1}{4} \times 52 = 13$

c 150

$\frac{1}{5} \times 750 = 150$

d 1800

$\frac{1}{8} \times 14\,400 = 1800$

2. a 36

$\frac{3}{4} \times 48 = 36$

b 64

$\frac{2}{3} \times 96 = 64$

c 1170

$\frac{9}{10} \times 1300 = 1170$

d 965

$\frac{5}{8} \times 1544 = 965$

3. 52

Number of children = $312 \div 6 = 52$

4. a 80

Number of dogs = $\frac{2}{3} \times 120 = 80$

b 10

Number of cats = $120 \div 4 = 30$
Total cats and dogs = $80 + 30 = 110$
Number of other pets = $120 - 110 = 10$

5. a 72

Number of males with licence
= $\frac{3}{5} \times 120 = 72$

b 147

Number of females with licence
= $\frac{5}{8} \times 120 = 75$
Total with licence = $72 + 75 = 147$

c 40

Total surveyed = $120 + 120 = 240$
Number of learners = $240 \div 6 = 40$

d 42

Number with green Ps
= $\frac{2}{7} \times 147 = 42$

e 7

Number with red Ps = $147 \div 3 = 49$
Difference = $49 - 42 = 7$
So 7 more drivers have red Ps than have green Ps.

6. a 4 725 200

Population of Queensland
= $23\,626\,000 \div 5 = 4\,725\,200$

b 1 181 300

Population of Victoria
= $23\,626\,000 \div 4 = 5\,906\,500$
Difference = $5\,906\,500 - 4\,725\,200 = 1\,181\,300$

So about 1 181 300 more people lived in Victoria than in Queensland.

Working with Fractions

Level 2 (page 13)

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



There are 16 squares altogether and, matching halves, 4 are shaded.

Fraction shaded = $\frac{4}{16} = \frac{1}{4}$

2. a $\frac{1}{6}$

b $\frac{17}{50}$

c $\frac{13}{24}$

d $\frac{1}{2}$

$\frac{1\frac{1}{2}}{3} = \frac{3}{6} = \frac{1}{2}$

3. a $\frac{41}{20}$

b $\frac{33}{7}$

c $\frac{56}{9}$

d $\frac{191}{15}$

4. a $6\frac{3}{7}$

b $7\frac{2}{3}$

c $2\frac{2}{5}$

d $7\frac{1}{5}$

5. 13

$3\frac{1}{4} = \frac{13}{4}$

So there are 13 quarters in $3\frac{1}{4}$.

6. a false

If one whole is divided into six parts, each part will be larger than what each part would be if it had been divided into eight.

So $\frac{1}{6} > \frac{1}{8}$

b false

$\frac{2}{5} = \frac{14}{35}$ and $\frac{3}{7} = \frac{15}{35}$

So $\frac{2}{5} < \frac{3}{7}$

c false

$\frac{7}{12} = \frac{35}{60}$ and $\frac{3}{5} = \frac{36}{60}$

So $\frac{7}{12} < \frac{3}{5}$

7. $\frac{7}{10}, \frac{11}{15}, \frac{3}{4}, \frac{23}{30}, \frac{4}{5}, \frac{5}{6}$ and $\frac{17}{20}$

$$\frac{3}{4} = \frac{45}{60}, \frac{4}{5} = \frac{48}{60}, \frac{5}{6} = \frac{50}{60}, \frac{7}{10} = \frac{42}{60},$$

$$\frac{11}{15} = \frac{44}{60}, \frac{17}{20} = \frac{51}{60} \text{ and } \frac{23}{30} = \frac{46}{60}$$

So, in order, the fractions are

$$\frac{42}{60}, \frac{44}{60}, \frac{45}{60}, \frac{46}{60}, \frac{48}{60}, \frac{50}{60} \text{ and } \frac{51}{60}$$

$$\text{or } \frac{7}{10}, \frac{11}{15}, \frac{3}{4}, \frac{23}{30}, \frac{4}{5}, \frac{5}{6} \text{ and } \frac{17}{20}.$$

8. $\frac{3}{16}$

$$\text{Fraction of day} = \frac{4\frac{1}{2}}{24} = \frac{9}{48} = \frac{3}{16}$$

9. a $\frac{2}{5}$

$$\text{Total litres} = 3 + 1 + 2 + 1 + \frac{1}{2} = 7\frac{1}{2}$$

Fraction that is lemonade

$$= \frac{3}{7\frac{1}{2}} = \frac{6}{15} = \frac{2}{5}$$

b $\frac{1}{15}$

Fraction that is apple juice

$$= \frac{\frac{1}{2}}{7\frac{1}{2}} = \frac{1}{15}$$

c $\frac{1}{3}$

$$\text{Litres of fruit juice} = 1 + 1 + \frac{1}{2} = 2\frac{1}{2}$$

Fraction of fruit juice

$$= \frac{2\frac{1}{2}}{7\frac{1}{2}} = \frac{5}{15} = \frac{1}{3}$$

Adding and Subtracting Fractions

Level 1 (page 14)

- a $\frac{4}{5}$
b 1
c $3\frac{1}{5}$
d $\frac{5}{8}$
e $\frac{1}{6}$
f $1\frac{1}{10}$
g $7\frac{5}{8}$
h $3\frac{1}{4}$
i $\frac{4}{5}$
j $2\frac{5}{8}$
k $5\frac{1}{4}$
l $2\frac{1}{2}$

2. $5\frac{7}{8}$

$$2\frac{3}{4} + 1\frac{1}{2} + 1\frac{5}{8} = 5\frac{7}{8}$$

3. $3\frac{5}{6}$

$$9\frac{2}{3} - 5\frac{5}{6} = 3\frac{5}{6}$$

4. a 0

b 4

5.

Mon.	Tue.	Wed.	Thu.	Fri.
$7\frac{3}{4}$	$7\frac{1}{2}$	8	$9\frac{1}{4}$	$5\frac{3}{4}$

a $38\frac{1}{4}$

$$\text{Total hours} = 7\frac{3}{4} + 7\frac{1}{2} + 8 + 9\frac{1}{4} + 5\frac{3}{4}$$

$$= 38\frac{1}{4}$$

b $3\frac{1}{4}$

$$\text{Extra hours} = 38\frac{1}{4} - 35 = 3\frac{1}{4}$$

c $1\frac{3}{4}$

Overtime hours on Thursday

$$= 9\frac{1}{4} - 7\frac{1}{2} = 1\frac{3}{4}$$

d $2\frac{1}{2}$

Monday: $\frac{1}{4}$ hour

Wednesday: $\frac{1}{2}$ hour

Total overtime hours

$$= 1\frac{3}{4} + \frac{1}{4} + \frac{1}{2} = 2\frac{1}{2}$$

6. a $14\frac{1}{4}$ ha

$$\text{Total area} = 8\frac{1}{2} + 5\frac{3}{4} = 14\frac{1}{4} \text{ ha}$$

b 3 ha

Area of third paddock

$$= 17\frac{1}{4} - 14\frac{1}{4} = 3 \text{ ha}$$

c $7\frac{3}{4}$ ha

Area of new paddock

$$= 25 - 17\frac{1}{4} = 7\frac{3}{4} \text{ ha}$$

d $\frac{3}{4}$ ha

$$\text{Difference in area} = 8\frac{1}{2} - 7\frac{3}{4} = \frac{3}{4} \text{ ha}$$

Adding and Subtracting Fractions

Level 2 (page 15)

- a $\frac{17}{20}$
b $\frac{1}{20}$
c $4\frac{7}{15}$
d $5\frac{11}{24}$
- a $6\frac{47}{60}$
b $7\frac{119}{120}$
c $\frac{13}{24}$
d $5\frac{19}{20}$

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

$$1\frac{1}{2} - \frac{7}{8} = \frac{5}{8}$$

$$\text{So } 1\frac{1}{2} - \frac{5}{8} = \frac{7}{8}$$

4. $\frac{3}{20}$

$$\frac{3}{4} - \frac{3}{5} = \frac{3}{20}$$

$$\text{So } \frac{3}{5} + \frac{3}{20} = \frac{3}{4}$$

5. $\frac{7}{20}$

Fraction eaten by Jon and Jill

$$= \frac{2}{5} + \frac{1}{4} = \frac{13}{20}$$

Fraction eaten by Jack

$$= 1 - \frac{13}{20} = \frac{7}{20}$$

6. $\frac{11}{12}$ cup

$$\text{Total sugar} = \frac{1}{4} + \frac{2}{3} = \frac{11}{12} \text{ cup}$$

7. a $\frac{5}{6}$ m

$$\text{Extra fabric} = 4\frac{1}{3} - 3\frac{1}{2} = \frac{5}{6} \text{ m}$$

b $6\frac{1}{8}$ m

$$\text{Material needed} = 3\frac{1}{2} + 2\frac{5}{8} = 6\frac{1}{8} \text{ m}$$

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

$$\frac{1}{4} + \frac{3}{8} + \frac{1}{6} + \frac{1}{12} = \frac{7}{8}$$

$$\text{Fraction who rode} = 1 - \frac{7}{8} = \frac{1}{8}$$

9. a 12

$$\text{Total boxes} = 5\frac{1}{2} + 2\frac{2}{3} + 3\frac{5}{6} = 12$$

b 1

$$\text{Boxes picked on Monday} = 5\frac{1}{2}$$

Boxes picked on other days

$$= 12 - 5\frac{1}{2} = 6\frac{1}{2}$$

So one fewer box was picked on Monday than on Tuesday and Wednesday combined.

Multiplying and Dividing Fractions

Level 2 (page 16)

- a $\frac{2}{5}$
b $\frac{2}{3}$
c $\frac{45}{64}$
d $15\frac{8}{9}$
e $97\frac{13}{20}$
- a 3
b $3\frac{1}{9}$
c $\frac{21}{64}$
d $1\frac{49}{57}$

3. a $\frac{1}{6}$ tin
Paint per boat = $3\frac{1}{3} \div 20 = \frac{1}{6}$ tin

b 2 tins
Paint needed = $12 \times \frac{1}{6} = 2$ tins

4. a $17\frac{1}{2}$
Total cans eaten = $7 \times 2\frac{1}{2} = 17\frac{1}{2}$

b 12
Number of days = $30 \div 2\frac{1}{2} = 12$

5. a $\frac{5}{12}$
Fraction bringing dogs = $\frac{5}{8} \times \frac{2}{3} = \frac{5}{12}$

b $\frac{1}{4}$
If $\frac{2}{3}$ bring a pet to school then $\frac{1}{3}$ do not.

If $\frac{1}{4}$ of these do own a pet then $\frac{3}{4}$ do not.

Fraction of students = $\frac{3}{4} \times \frac{1}{3} = \frac{1}{4}$

So $\frac{1}{4}$ of all the students do not own a pet.

6. a $2\frac{1}{2}$ cups
 $60 \div 12 = 5$

So Ed makes five times the quantity given in the recipe.

Amount of milk = $5 \times \frac{1}{2}$ cup
 $= 2\frac{1}{2}$ cups

b 7
 $3\frac{1}{2} \div \frac{1}{2} = 7$

So Ed is making seven times the quantity given in the recipe.

Number of eggs = $7 \times 1 = 7$

7. a $\frac{1}{10}$
Time per question
 $= \frac{3}{4} \div 7\frac{1}{2} = \frac{1}{10}$ hour

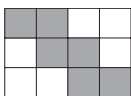
b 25
Number of questions
 $= 2\frac{1}{2} \div \frac{1}{10} = 25$

Mixed Fractions

Level 1 (page 17)

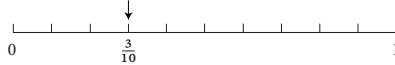
1. (Any three of these or other fractions equivalent to one-half.)

$\frac{1}{2}, \frac{2}{4}, \frac{3}{6}, \frac{6}{12}$



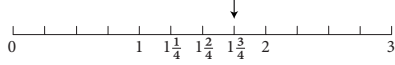
[6 out of the 12 squares are shaded, or 2 out of the 4 in every row, or 3 out of every 6, or half of the squares are shaded.]

2. a $\frac{3}{10}$



[Dividing each of the given divisions in two means that there will then be 10 divisions so each one is $\frac{1}{10}$.]

b $1\frac{3}{4}$



[There are 12 divisions between 0 and 3 so each one is $\frac{3}{12}$ or $\frac{1}{4}$.]

3. a 17

$\frac{1}{3}$ of 51 = $51 \div 3 = 17$

b 69

$\frac{3}{4} \times 92 = 69$

c 4907

$\frac{7}{8} \times 5608 = 4907$

4. $8\frac{1}{2}$

5. a $1\frac{1}{2}$

b $\frac{1}{6}$

c $4\frac{3}{5}$

d $2\frac{7}{8}$

6. $\frac{5}{8}$

$\frac{5}{8} = \frac{15}{24}$

$\frac{7}{12} = \frac{14}{24}$

So $\frac{5}{8}$ is larger than $\frac{7}{12}$.

7. a $4\frac{1}{4}$ hours

Hours spent mowing = $1\frac{3}{4} + 2\frac{1}{2}$
 $= 4\frac{1}{4}$

b $\frac{3}{4}$ hour

Extra hours = $2\frac{1}{2} - 1\frac{3}{4}$
 $= \frac{3}{4}$

8. 672

Number absent = $\frac{3}{10} \times 960 = 288$

Number present = $960 - 288 = 672$

9. a $\frac{1}{6}$

Fraction living in the west

$= 1 - \left(\frac{1}{6} + \frac{1}{12} + \frac{1}{3} + \frac{1}{4}\right)$

$= 1 - \frac{5}{6}$

$= \frac{1}{6}$

b 4600

Number living in west = $27\,600 \div 6 = 4600$

c 4600

Number living in centre
 $= 27\,600 \div 4 = 6900$

Number living in south
 $= 27\,600 \div 12 = 2300$

Difference = $6900 - 2300 = 4600$

Mixed Fractions

Level 2 (page 18)

1. a 91

$728 \div 8 = 91$

b 304

$\frac{2}{3} \times 456 = 304$

c 356

$\frac{4}{7} \times 623 = 356$

2. a $\frac{19}{20}$

b $\frac{2}{15}$

c $6\frac{14}{15}$

d $4\frac{11}{24}$

3. a $\frac{21}{50}$

b $\frac{1}{2}$

c $5\frac{3}{4}$

d $\frac{7}{9}$

e $\frac{7}{16}$

f $2\frac{1}{10}$

4. $\frac{5}{6}, \frac{17}{20}, \frac{13}{15}, \frac{9}{10}$

$\frac{13}{15} = \frac{52}{60}, \frac{17}{20} = \frac{51}{60}, \frac{9}{10} = \frac{54}{60}, \frac{5}{6} = \frac{50}{60}$

So, in order the fractions are

$\frac{50}{60}, \frac{51}{60}, \frac{52}{60}$ and $\frac{54}{60}$ or $\frac{5}{6}, \frac{17}{20}, \frac{13}{15}, \frac{9}{10}$.

5. $\frac{1}{6}$

Hours in 1 week = $7 \times 24 = 168$

The required fraction is $\frac{28}{168}$ or $\frac{1}{6}$.

6. a 80

Number of workers born overseas
 $= \frac{5}{8} \times 128 = 80$

b 40

New number of workers = $128 + 52 = 180$

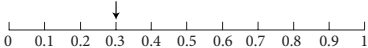
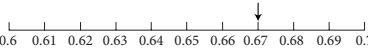
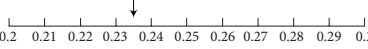
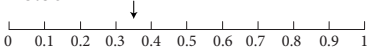
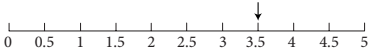
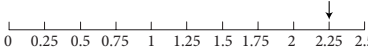
Number of all workers born overseas = $\frac{2}{3} \times 180 = 120$

Number of additional workers born overseas = $120 - 80 = 40$

7. a $\frac{1}{6}$
 $\frac{2}{3}$ of the pizza remains.
 Fraction each gets = $\frac{2}{3} \div 4$
 $= \frac{1}{6}$
- b $\frac{1}{2}$
 Harley ate $\frac{1}{3}$ or $\frac{2}{6}$
 So each of the friends gets half of Harley's share.
8. a $2\frac{1}{2}$
 Amount of time = $\frac{2}{3} \times 3\frac{3}{4} \text{ h} = 2\frac{1}{2} \text{ h}$
- b $1\frac{1}{4}$
 Extra time = $(3\frac{3}{4} - 2\frac{1}{2}) \text{ h} = 1\frac{1}{4} \text{ h}$
- c $3\frac{1}{8} \text{ h}$
 Total time = $(3\frac{3}{4} + 2\frac{1}{2}) \text{ h} = 6\frac{1}{4} \text{ h}$
 Average time = $6\frac{1}{4} \text{ h} \div 2 = 3\frac{1}{8} \text{ h}$

Introduction to Decimals

Level 1 (page 19)

1. a 0.7
 b 0.03
 c 0.009
 d 0.41
 e 0.139
 f 0.057
2. a 
 b 
 c 
3. a 0.35

 Halfway between 0.3 and 0.4 is 0.35
- b 3.5

- c 2.25

4. a tens
 b units (or ones)
 c tenths
 d hundredths
 e thousandths
5. a 0.8
 0.800 is larger than 0.009.
 b 0.2
 0.20 is larger than 0.13.

6. 0.201
 $0.21 = 0.210$
 $0.2100 = 0.210$
 So 0.201 is the odd one out because the others are all equal.
7. 0.008, 0.027, 0.03, 0.1, 0.105, 0.26
 The numbers are 0.030, 0.105, 0.008, 0.260, 0.100 and 0.027.
 So, from lowest to highest: 0.008, 0.027, 0.030, 0.100, 0.105 and 0.260.
 In order the numbers are 0.008, 0.027, 0.03, 0.1, 0.105 and 0.26.
8. a 3
 3.2 is between 3 and 4 and closer to 3.
 b 16
 15.7 is between 15 and 16 and closer to 16.
 c 29
 28.5 is halfway between 28 and 29. It gets rounded up to 29.
 d 15
 e 30

Adding and Subtracting Decimals

Level 1 (page 20)

1. a 0.11
 $\frac{1}{10} + \frac{1}{100} = \frac{11}{100} = 0.11$
 b 0.703
 $\frac{7}{10} + \frac{3}{1000} = \frac{703}{1000} = 0.703$
 c 0.39
 $\frac{9}{100} + \frac{3}{10} = \frac{39}{100} = 0.39$
2. a 14.328
 b 95.086
 c 13.52
 d 7.155
 e 0.877
3. 1.08
 $0.6 + 0.48 = 1.08$
4. 14.697
 $16.837 - 2.14 = 14.697$
5. 13.5
 $7.25 + 9.65 = 16.9$
 $16.9 - 3.4 = 13.5$
6. 0.05
 $3.25 - 3.2 = 0.05$
 So $3.2 + 0.05 = 3.25$.
7. 5.6 m
 Difference in height = $(12.3 - 6.7) \text{ m}$
 $= 5.6 \text{ m}$
8. a 0.95 m
 Length remaining = $(1.65 - 0.7) \text{ m}$
 $= 0.95 \text{ m}$

- b 0.05 m
 Total length = $(0.9 + 0.8) \text{ m}$
 $= 1.7 \text{ m}$
 Extra length needed
 $= (1.7 - 1.65) \text{ m}$
 $= 0.05 \text{ m}$
9. a 0.45 kg
 Difference = $(1.2 - 0.75) \text{ kg}$
 $= 0.45 \text{ kg}$
- b 5.4 kg
 Total weight = $(0.75 + 1.2 + 3.45) \text{ kg}$
 $= 5.4 \text{ kg}$
- c 1.5 kg
 Total weight of bags A and B
 $= (0.75 + 1.2) \text{ kg}$
 $= 1.95 \text{ kg}$
 Difference = $(3.45 - 1.95) \text{ kg}$
 $= 1.5 \text{ kg}$
 So Bag C is 1.5 kg heavier than Bags A and B combined.