

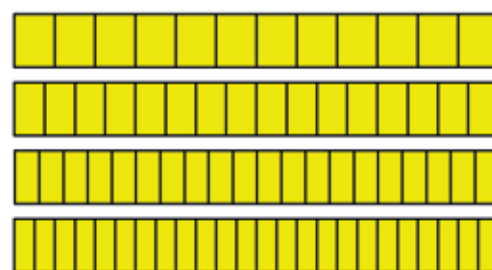
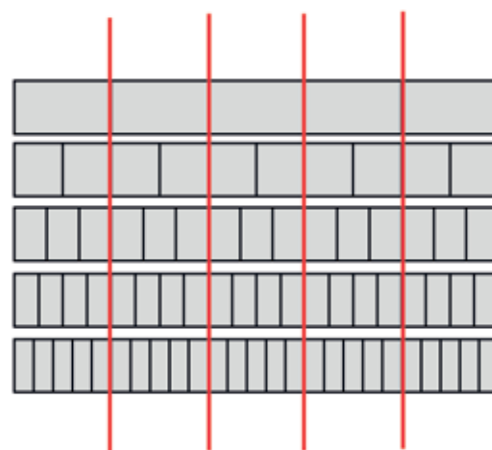
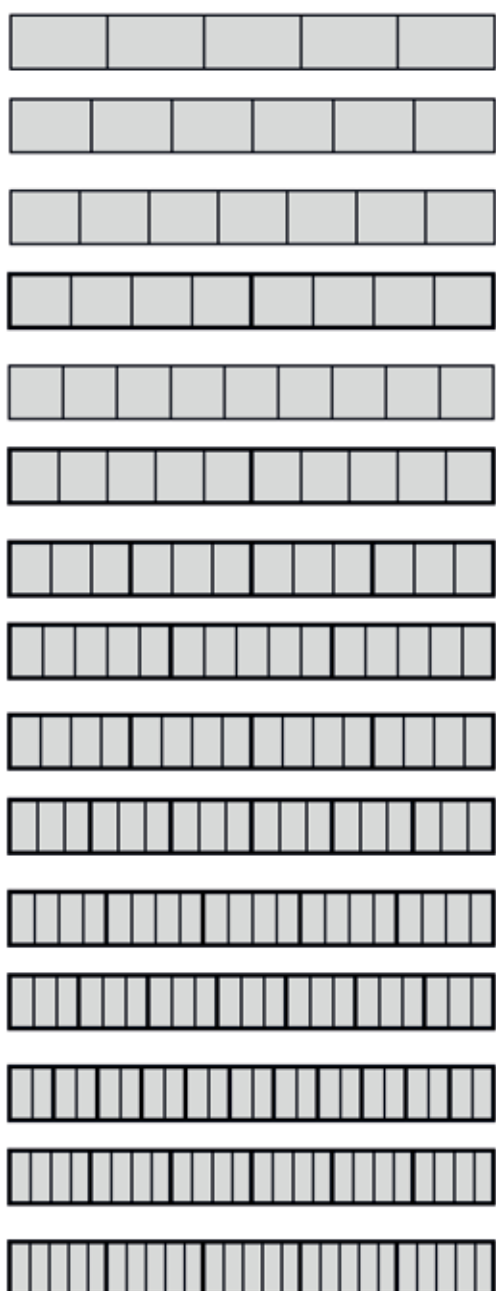
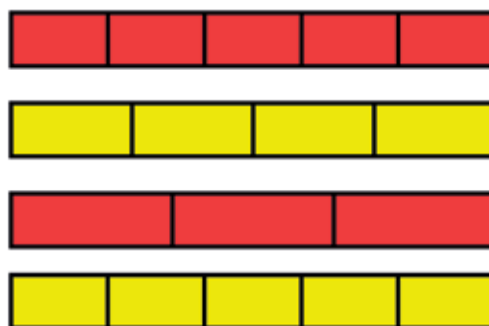
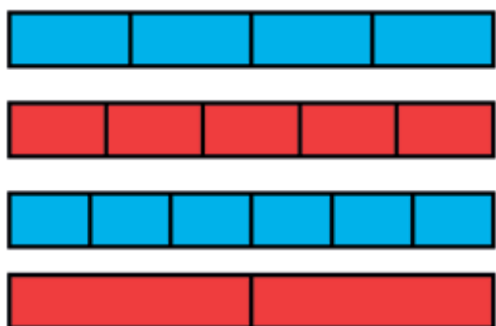
CHAPTER 6

Fractions

In this chapter you will learn how to say precisely how long something is. With whole numbers only, we cannot always say precisely how long something is. Fractions were invented for that purpose. You will also learn to calculate with fractions.

6.1	Measuring accurately with parts of a unit.....	155
6.2	Different parts in different colours	160
6.3	Combining fractions	162
6.4	Tenths and hundredths (percentages)	164
6.5	Thousandths, hundredths and tenths.....	167
6.6	Fraction of a fraction	169
6.7	Multiplying with fractions	172
6.8	Ordering and comparing fractions	176





6 Fractions

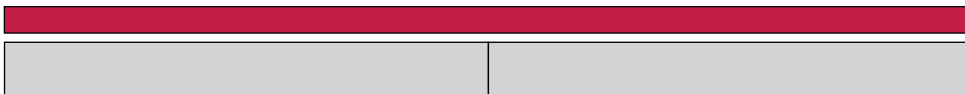
6.1 Measuring accurately with parts of a unit

A STRANGE MEASURING UNIT

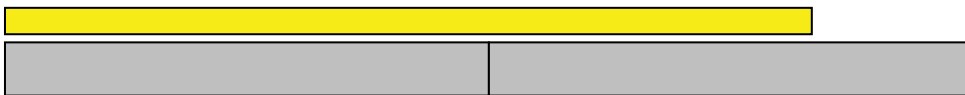
In this activity, you will measure lengths with a unit called a *greystick*. The grey measuring stick below is exactly 1 greystick long. You will use this stick to measure different objects.



The red bar below is exactly 2 greysticks long.



As you can see, the yellow bar below is longer than 1 greystick but shorter than 2 greysticks.



To try to measure the yellow bar accurately, we will divide one greystick into six equal parts:



So each of these parts is **one sixth** of a greystick.

1. Do you think one can say the yellow bar is **one and four sixths of a greystick** long?

















2. Describe the length of the blue bar in words.

.....

This greystick ruler is divided into seven equal parts:
Each part is **one seventh** of a greystick.



3. In each case below, say what the smaller parts of the greystick may be called. Write your answers in words.

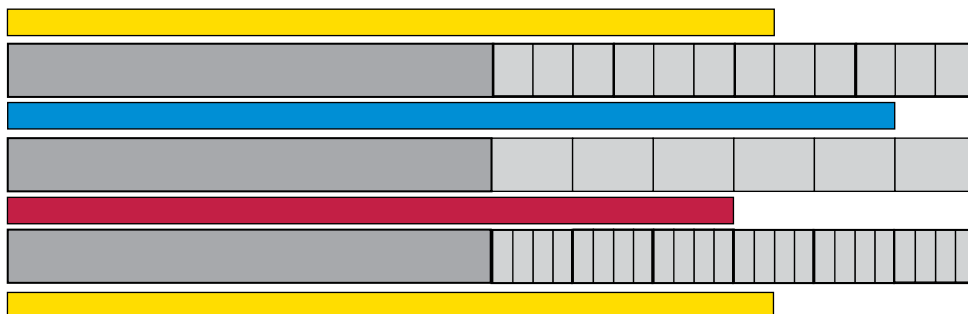
- (a) 
- (b) 
- (c) 
- (d) 
- (e) 
- (f) 
- (g) 
- (h) 
- (i) 
- (j) 
- (k) 
- (l) 
- (m) 
- (n) 

How did you find out what to call the small parts?

.....

Write all your answers to the following questions *in words*.

4. (a) How long is the upper yellow bar?



(b) How long is the lower yellow bar?

5. (a) How long is the blue bar at the bottom of the previous page?

.....

(b) How long is the red bar at the bottom of the previous page?

.....

6. (a) How many twelfths of a greystick is the same length as one sixth of a greystick?

.....

(b) How many twenty-fourths is the same length as one sixth of a greystick?

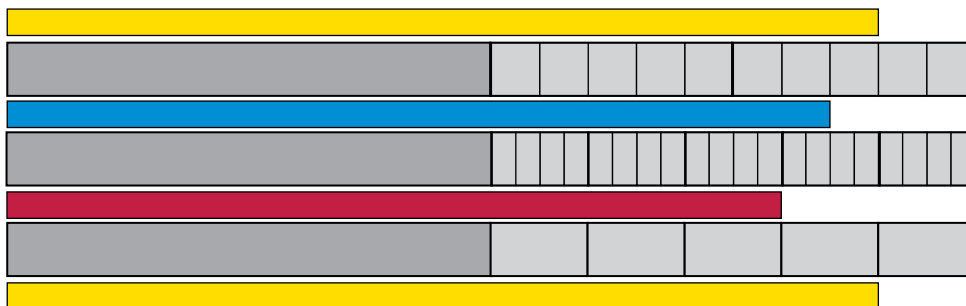
.....

(c) How many twenty-fourths is the same length as seven twelfths of a greystick?

.....

7. (a) How long is the upper yellow bar below?

.....



(b) How long is the lower yellow bar above?

.....

(c) How long is the blue bar?

.....

(d) How long is the red bar?

.....

8. (a) How many fifths of a greystick is the same length as 12 twentieths of a greystick?



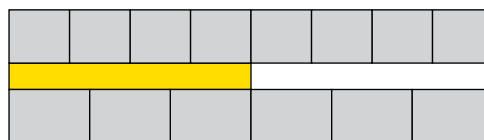
.....

(b) How many fourths (or quarters) of a greystick is the same length as 15 twentieths of a greystick?

.....

DESCRIBE THE SAME LENGTH IN DIFFERENT WAYS

Two fractions may describe the same length.
You can see here that three sixths of a greystick
is the same as four eighths of a greystick.



When two fractions describe the same portion we say they are **equivalent**.

1. (a) What can each small part on this greystick be called?



- (b) How many eighteenths is one sixth of the greystick?
(c) How many eighteenths is one third of the greystick?
(d) How many eighteenths is five sixths of the greystick?

2. (a) Write (in words) the names of four different fractions that are all equivalent to three quarters. You may look at the yellow greysticks on page 154 to help you.

.....
.....

- (b) Which equivalents for two thirds can you find on the yellow greysticks?

.....

3. The information that 2 thirds is equivalent to 4 sixths, to 6 ninths and to 8 twelfths is written in the second row of the table below. Complete the other rows of the table in the same way. The diagrams on page 154 may help you.

thirds	fourths	fifths	sixths	eighths	ninths	tenths	twelfths	twentieths
1								
2	–	–	4	–	6	–	8	–
–	3							
–	–	1						
–	–	2						
–	–	3						
–	–	4						

4. Complete this table in the same way as the table in question 3.

fifths	tenths	fifteenths	twentieths	twenty-fifths	fiftieths	hundredths
1						
2						
3						
4						
5						
6						
7						

5. Draw on the greysticks below to show that 3 fifths and 9 fifteenths are equivalent. Draw freehand; you need not measure and draw accurately.

6. Complete these tables in the same way as the table in question 4.

eighths	sixteenths	24ths
1		
2		
3		
4		
5		
6		
7		
8		
9		

24ths	sixths	twelfths	18ths
	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		

7. (a) How much is five twelfths plus three twelfths?
- (b) How much is five twelfths plus one quarter?
- (c) How much is five twelfths plus three quarters?
- (d) How much is one third plus one quarter? It may help if you work with the equivalent fractions in twelfths.

.....

6.2 Different parts in different colours

This strip is divided into eight equal parts.

Five eighths of this strip is red.



1. What part of the strip is blue?

.....

2. What part of this strip is yellow?

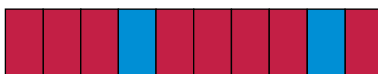
.....



3. What part of the strip is red?

.....

4. What part of this strip is coloured blue and what part is coloured red?



.....

5. (a) What part of this strip is blue, what part is red and what part is white?



.....

- (b) Express your answer differently with equivalent fractions.

.....

6. A certain strip is not shown here. Two ninths of the strip is blue, and three ninths of the strip is green. The rest of the strip is red. What part of the strip is red?

.....

7. What part of the strip below is yellow, what part is blue, and what part is red?



.....

The number of parts in a fraction is called the **numerator** of the fraction. For example, the numerator in 5 sixths is 5.

The type of part in a fraction is called the **denominator**. It is the name of the parts that are being referred to and it is determined by the size of the part. For example, sixths is the denominator in 5 sixths.

$\frac{5}{6}$ is a short way to write 5 sixths.

We may also write $\frac{5}{6}$.

Even when we write $\frac{5}{6}$ or $\frac{5}{6}$, we still say “5 sixths”.

$\frac{1}{6}$ and $\frac{1}{6}$ are short ways to write *sixths*.

The numerator (number of parts) is written above the line of the fraction: $\frac{\text{numerator}}{\dots}$

The denominator is indicated by a number written below the line: $\frac{\dots}{\text{denominator}}$

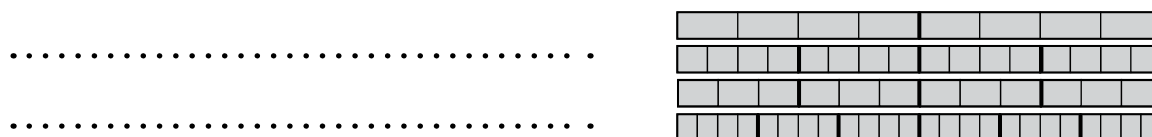
To **enumerate** means “to find the number of”.

To **denominate** means “to give a name to”.

8. Consider the fraction 3 quarters. It can be written as $\frac{3}{4}$.

(a) Multiply both the numerator and the denominator by 2 to form a new fraction.

Is the new fraction equivalent to $\frac{3}{4}$? You may check on the diagram below.



(b) Multiply both the numerator and the denominator by 3 to form a new fraction.

Is the new fraction equivalent to $\frac{3}{4}$?

.....

(c) Multiply both the numerator and the denominator by 4 to form a new fraction.

Is the new fraction equivalent to $\frac{3}{4}$?

.....

(d) Multiply both the numerator and the denominator by 6 to form a new fraction.

Is the new fraction equivalent to $\frac{3}{4}$?

.....

6.3 Combining fractions

BIGGER AND SMALLER PARTS

Gertie was asked to solve this problem:

A team of road-builders built $\frac{8}{12}$ km of road in one week, and $\frac{10}{12}$ km in the next week. What is the total length of road that they built in the two weeks?

She thought like this to solve the problem:

$\frac{8}{12}$ is **eight twelfths** and $\frac{10}{12}$ is **ten twelfths**, so altogether it is **eighteen twelfths**.
I can write $\frac{18}{12}$ or “18 twelfths”.

I can also say 12 twelfths of a km is 1 km, so **18 twelfths** is **1 km and 6 twelfths of a km**.

This I can write as $1\frac{6}{12}$. It is the same as $1\frac{1}{2}$ km.

Gertie was also asked the question: How much is $4\frac{5}{9} + 2\frac{7}{9}$?

She thought like this to answer it:

$4\frac{5}{9}$ is 4 wholes and 5 ninths, and $2\frac{7}{9}$ is 2 wholes and 7 ninths.

So altogether it is 6 wholes and 12 ninths. But 12 ninths is 9 ninths (1 whole) and 3 ninths, so I can say it is 7 wholes and 3 ninths.

I can write $7\frac{3}{9}$.

1. Would Gertie be wrong if she said her answer was $7\frac{1}{3}$?

.....

2. Sentereng has $4\frac{7}{12}$ bottles of cooking oil. He gives $1\frac{5}{12}$ bottles to his friend Willem. How much oil does Sentereng have left?

.....

3. Margaret has $5\frac{5}{8}$ bottles of cooking oil. She gives $3\frac{7}{8}$ bottles to her friend Naledi. How much oil does Margaret have left?

.....

4. Calculate each of the following:

(a) $4\frac{2}{7} - 3\frac{6}{7}$

.....

.....

(c) $3\frac{6}{7} + 1\frac{4}{5}$

.....

.....

(e) $1\frac{3}{10} - \frac{2}{3}$

.....

.....

(g) $\frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8}$

.....

.....

(i) $\frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8}$

.....

(j) $2\frac{4}{7} + 2\frac{4}{7} + 2\frac{4}{7} + 2\frac{4}{7} + 2\frac{4}{7} + 2\frac{4}{7} + 2\frac{4}{7} + 2\frac{4}{7}$

.....

(k) $(4\frac{2}{7} + 1\frac{4}{7}) - 2\frac{1}{3}$

.....

(l) $(2\frac{7}{10} + 3\frac{2}{5}) - (1\frac{2}{5} + 3\frac{7}{10})$

.....

5. Neo's report had five chapters. The first chapter was $\frac{3}{4}$ of a page, the second chapter was $2\frac{1}{2}$ pages, the third chapter was $3\frac{3}{4}$ pages, the fourth chapter was 3 pages and the fifth chapter was $1\frac{1}{2}$ pages. How many pages was Neo's report in total?

.....

6.4 Tenths and hundredths (percentages)

1. (a) 100 children each get 3 biscuits. How many biscuits is this in total?

.....

- (b) 500 sweets are shared equally between 100 children. How many sweets does each child get?

.....

2. The picture below shows a strip of licorice. The very small pieces can easily be broken off on the thin lines. How many very small pieces are shown on the picture?



.....

3. Gatsha runs a spaza shop. He sells strips of licorice like the above for R2 each.

- (a) What is the cost of one very small piece of licorice, when you buy from Gatsha?

.....

- (b) Jonathan wants to buy one fifth of a strip of licorice. How much should he pay?

.....

- (c) Batseba eats 25 very small pieces. What part of a whole strip of licorice is this?

.....

Each small piece of the above strip is **one hundredth** of the whole strip.

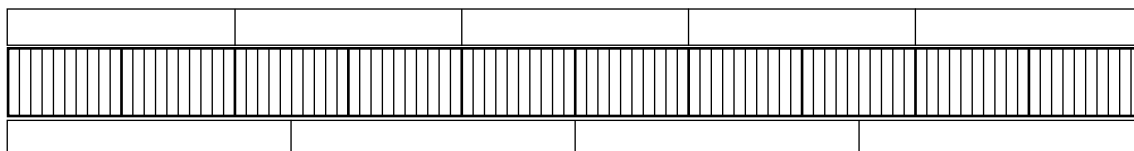
4. (a) Why can each small piece be called *one hundredth* of the whole strip?

.....

- (b) How many hundredths is the same as one tenth of the strip?

.....

Gatsha often sells parts of licorice strips to customers. He uses a “quarters marker” and a “fifths marker” to cut off the pieces correctly from full strips. His two markers are shown below, next to a full strip of licorice.



5. (a) How many hundredths is the same as two fifths of the whole strip?

.....

- (b) How many tenths is the same as $\frac{2}{5}$ of the whole strip?

.....

- (c) How many hundredths is the same as $\frac{3}{4}$ of the whole strip?

.....

- (d) Freddie bought $\frac{60}{100}$ of a strip. How many fifths of a strip is this?

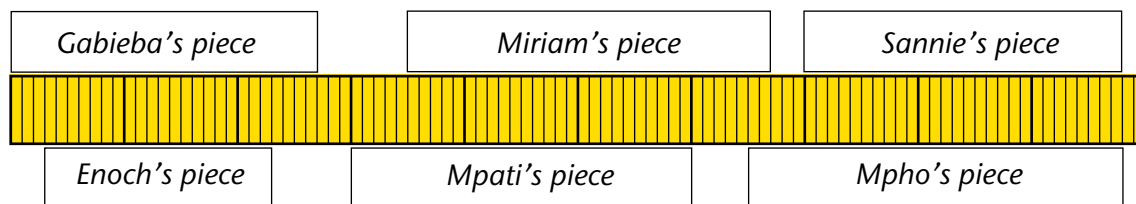
.....

- (e) Jamey bought part of a strip for R1,60. What part of a strip did she buy?

.....

6. Gatsha, the owner of the spaza shop, sold pieces of yellow licorice to different children. Their pieces are shown below.

How much (what part of a whole strip) did each of them get?



.....

.....

7. The yellow licorice shown above costs R2,40 (240 cents) for a strip. How much does each of the children have to pay? Round off the amounts to the nearest cent.

.....

.....

8. (a) How much is $\frac{1}{100}$ of 300 cents? (b) How much is $\frac{7}{100}$ of 300 cents?

.....

- (c) How much is $\frac{25}{100}$ of 300 cents? (d) How much is $\frac{1}{4}$ of 300 cents?

.....

- (e) How much is $\frac{40}{100}$ of 300 cents? (f) How much is $\frac{2}{5}$ of 300 cents?

.....

9. Explain why your answers for questions 8(e) and 8(f) are the same.

.....

Another word for **hundredth** is **per cent**.

Instead of saying

Miriam received **32 hundredths** of a licorice strip,
we can say

Miriam received **32 per cent** of a licorice strip.

The symbol for per cent is %.

10. How much is 80% of each of the following?

- (a) R500 (b) R480 (c) R850 (d) R2 400

.....

11. How much is 8% of each of the amounts in 10(a), (b), (c) and (d)?

.....

12. How much is 15% of each of the amounts in 10(a), (b), (c) and (d)?

.....

13. Building costs of houses increased by 20%. What is the new building cost for a house that previously cost R110 000 to build?

.....

14. The value of a car decreases by 30% after one year. If the price of a new car is R125 000, what is the value of the car after one year?

.....

15. Investigate which denominators of fractions can easily be converted to powers of 10.

.....

6.5 Thousandths, hundredths and tenths

MANY EQUAL PARTS

1. In a camp for refugees, 50 kg of sugar must be shared equally between 1 000 refugees. How much sugar will each refugee get? Keep in mind that 1 kg is 1 000 g. You can give your answer in grams.

.....

2. How much is each of the following?

(a) one tenth of R6 000

(b) one hundredth of R6 000

.....

(c) one thousandth of R6 000

(d) ten hundredths of R6 000

.....

(e) 100 thousandths of R6 000

(f) seven hundredths of R6 000

.....

(g) 70 thousandths of R6 000

(h) seven thousandths of R6 000

.....

3. Calculate.

(a) $\frac{3}{10} + \frac{5}{8}$

(b) $3\frac{3}{10} + 2\frac{4}{5}$

.....

.....

(c) $\frac{3}{10} + \frac{7}{100}$

(d) $\frac{3}{10} + \frac{70}{100}$

.....

.....

(e) $\frac{3}{10} + \frac{7}{1000}$

(f) $\frac{3}{10} + \frac{70}{1000}$

.....

.....

4. Calculate.

(a) $\frac{3}{10} + \frac{7}{100} + \frac{4}{1000}$

.....

.....

(c) $\frac{6}{10} + \frac{20}{100} + \frac{700}{1000}$

.....

.....

(b) $\frac{3}{10} + \frac{70}{100} + \frac{400}{1000}$

.....

.....

(d) $\frac{2}{10} + \frac{5}{100} + \frac{4}{1000}$

.....

.....

5. In each case investigate whether the statement is true or not, and give reasons for your final decision.

(a) $\frac{1}{10} + \frac{23}{100} + \frac{346}{1000} = \frac{6}{10} + \frac{3}{100} + \frac{46}{1000}$

.....

.....

(b) $\frac{1}{10} + \frac{23}{100} + \frac{346}{1000} = \frac{7}{10} + \frac{2}{100} + \frac{6}{1000}$

.....

.....

(c) $\frac{1}{10} + \frac{23}{100} + \frac{346}{1000} = \frac{6}{10} + \frac{7}{100} + \frac{6}{1000}$

.....

.....

(d) $\frac{676}{1000} = \frac{6}{10} + \frac{7}{100} + \frac{6}{1000}$

.....

.....

6.6 Fraction of a fraction

FORM PARTS OF PARTS

1. (a) How much is 1 fifth of R60?
(b) How much is 3 fifths of R60?
2. How much is 7 tenths of R80?
(You may first work out how much 1 tenth of R80 is.)
.....
3. In the USA the unit of currency is the US dollar, in Britain it is the pound, in Western Europe the euro, and in Botswana the pula.
(a) How much is 2 fifths of 20 pula?
(b) How much is 2 fifths of 20 euro?
(c) How much is 2 fifths of 12 pula?
4. Why was it so easy to calculate 2 fifths of 20, but difficult to calculate 2 fifths of 12?
.....

There is a way to make it easy to calculate something like 3 fifths of R4. You just change the rands to cents!

5. Calculate each of the following. You may change the rands to cents to make it easier.
(a) 3 eighths of R2,40
(b) 7 twelfths of R6
(c) 2 fifths of R21
(d) 5 sixths of R3
.....
6. You will now do some calculations about secret objects.
(a) How much is 3 tenths of 40 secret objects?
.....
(b) How much is 3 eighths of 40 secret objects?
.....

The secret objects in question 6 are fiftieths of a rand.

7. (a) How many fiftieths is 3 tenths of 40 fiftieths?

.....

- (b) How many fiftieths is 5 eighths of 40 fiftieths?

.....

8. (a) How many twentieths of a kilogram is the same as $\frac{3}{4}$ of a kilogram?

- (b) How much is one fifth of 15 rands?

- (c) How much is one fifth of 15 twentieths of a kilogram?

- (d) So, how much is one fifth of $\frac{3}{4}$ of a kilogram?

9. (a) How much is $\frac{1}{12}$ of 24 fortieths of some secret object?

- (b) How much is $\frac{7}{12}$ of 24 fortieths of the secret object?

10. Do you agree that the answers for the previous question are 2 fortieths and 14 fortieths? If you disagree, explain why you disagree.

.....

11. (a) How much is $\frac{1}{5}$ of 80?

- (b) How much is $\frac{3}{5}$ of 80?

- (c) How much is $\frac{1}{40}$ of 80?

- (d) How much is $\frac{24}{40}$ of 80?

- (e) Explain why $\frac{3}{5}$ of 80 is the same as $\frac{24}{40}$ of 80.

.....

12. Look again at your answers for questions 9(b) and 11(e). How much is $\frac{7}{12}$ of $\frac{3}{5}$?
Explain your answer.

.....

.....

The secret object in question 9 was an envelope with R160 in it.

After the work you did in questions 9, 10 and 11, you know that

- $\frac{24}{40}$ and $\frac{3}{5}$ are just two ways to describe the same thing, and
- $\frac{7}{12}$ of $\frac{3}{5}$ is therefore the same as $\frac{7}{12}$ of $\frac{24}{40}$.

It is easy to calculate $\frac{7}{12}$ of $\frac{24}{40}$: 1 twelfth of 24 is 2, so 7 twelfths of 24 is 14, so 7 twelfths of 24 fortieths is 14 fortieths.

$\frac{3}{8}$ of $\frac{2}{3}$ can be calculated in the same way. But 1 eighth of $\frac{2}{3}$ is a slight problem, so it would be better to use some equivalent of $\frac{2}{3}$. The equivalent should be chosen so that it is easy to calculate 1 eighth of it; so it would be nice if the numerator could be 8.

$\frac{8}{12}$ is equivalent to $\frac{2}{3}$, so instead of calculating $\frac{3}{8}$ of $\frac{2}{3}$ we may calculate $\frac{3}{8}$ of $\frac{8}{12}$.

13.(a) Calculate $\frac{3}{8}$ of $\frac{8}{12}$.

.....

(b) So, how much is $\frac{3}{8}$ of $\frac{2}{3}$?

.....

14. In each case replace the second fraction by a suitable equivalent, and then calculate.

(a) How much is $\frac{3}{4}$ of $\frac{5}{8}$?

.....

(b) How much is $\frac{7}{10}$ of $\frac{2}{3}$?

.....

(c) How much is $\frac{2}{3}$ of $\frac{1}{2}$?

.....

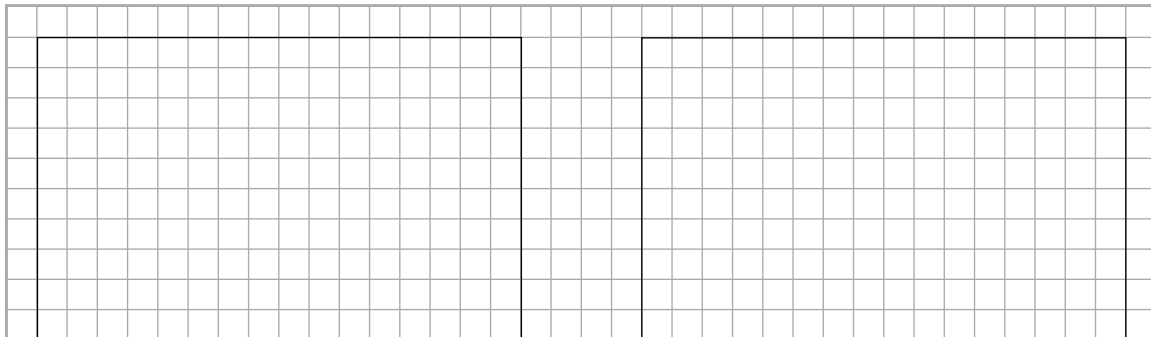
(d) How much is $\frac{3}{5}$ of $\frac{3}{5}$?

.....

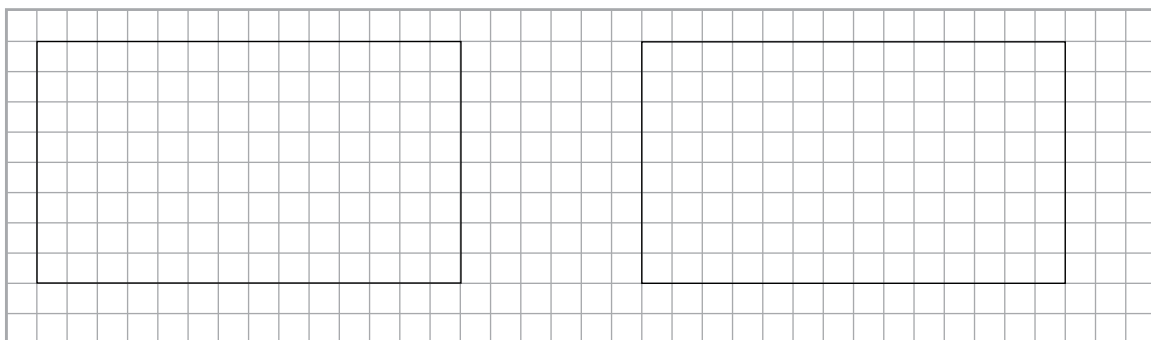
6.7 Multiplying with fractions

PARTS OF RECTANGLES, AND PARTS OF PARTS

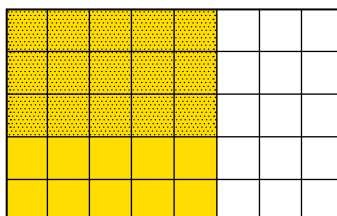
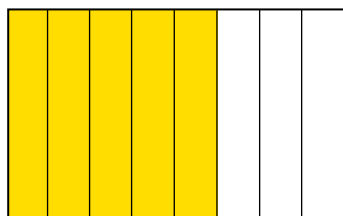
1. (a) Divide the rectangle on the left into eighths by drawing vertical lines.
Lightly shade the left 3 eighths of the rectangle.
- (b) Divide the rectangle on the right into fifths drawing horizontal lines.
Lightly shade the upper 2 fifths of the rectangle.



2. (a) Shade 4 sevenths of the rectangle on the left below.
- (b) Shade 16 twenty-eighths of the rectangle on the right below.



3. (a) What part of each big rectangle below is coloured yellow?
- (b) What part of the *yellow* part of the rectangle on the right is dotted?

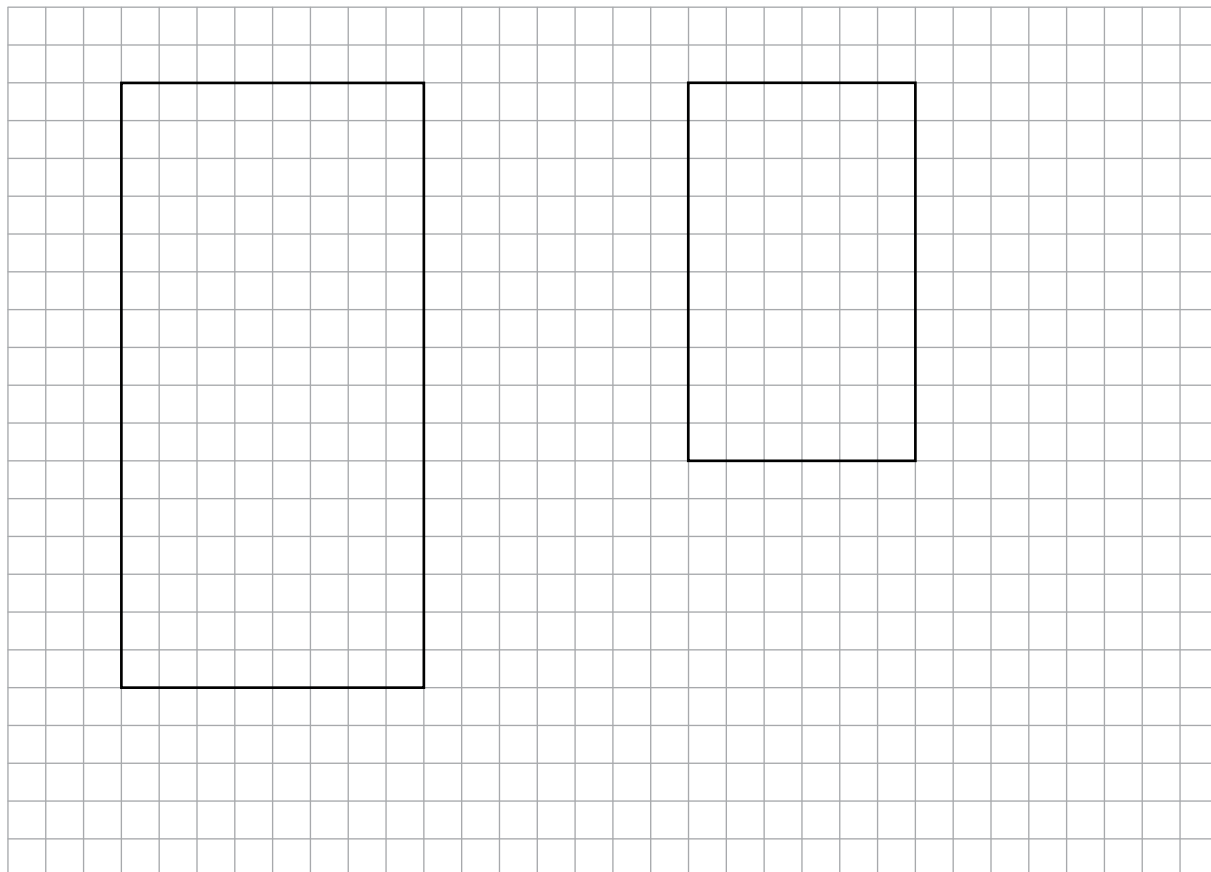


- (c) Into how many squares is the whole rectangle on the right divided?
- (d) What part of the whole rectangle on the right is yellow *and* dotted?
.....

4. Make diagrams on the grid below to help you to figure out how much each of the following is:

(a) $\frac{3}{4}$ of $\frac{5}{8}$

(b) $\frac{2}{3}$ of $\frac{4}{5}$



Here is something you can do with the fractions $\frac{3}{4}$ and $\frac{5}{8}$:

Multiply the two numerators and make this the numerator of a new fraction.

Also multiply the two denominators, and make this the denominator of a new fraction

$$\frac{3 \times 5}{4 \times 8} = \frac{15}{32}.$$

5. Compare the above with what you did in question 14(a) of section 6.6 and in question 4(a) at the top of this page. What do you notice about $\frac{3}{4}$ of $\frac{5}{8}$ and $\frac{3 \times 5}{4 \times 8}$?

.....

.....

6. (a) Alan has 5 heaps of 8 apples each. How many apples is that in total?

.....

(b) Sean has 10 heaps of 6 quarter apples each. How many apples is that in total?

.....

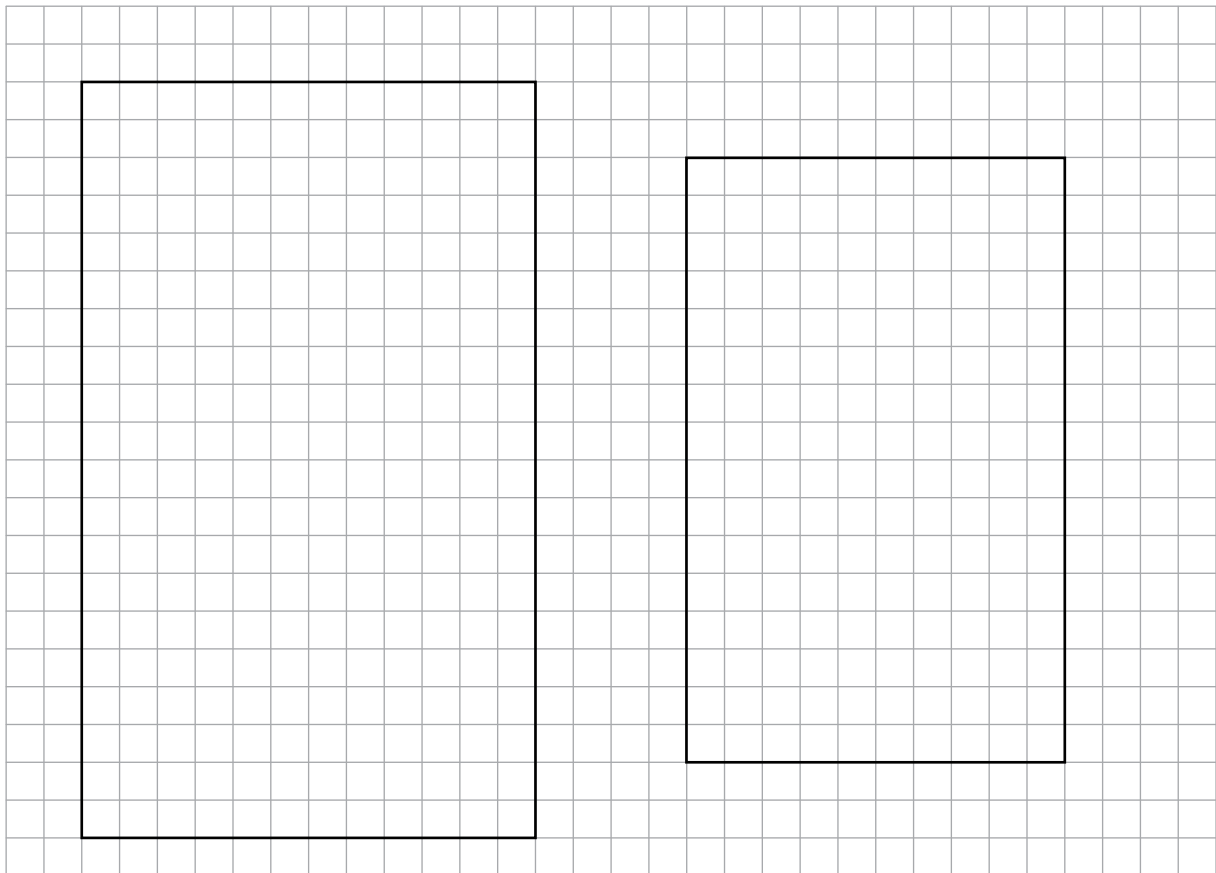
Instead of saying $\frac{5}{8}$ of R40 or $\frac{5}{8}$ of $\frac{2}{3}$ of a floor surface,
we may say $\frac{5}{8} \times \text{R40}$ or $\frac{5}{8} \times \frac{2}{3}$ of a floor surface.

7. Use the diagrams below to figure out how much each of the following is:

(a) $\frac{3}{10} \times \frac{5}{6}$

(b) $\frac{2}{5} \times \frac{7}{8}$

.....



8. (a) Perform the calculations $\frac{\text{numerator} \times \text{numerator}}{\text{denominator} \times \text{denominator}}$ for $\frac{3}{10}$ and $\frac{5}{6}$ and compare the answer to your answer for question 7(a).

.....

- (b) Do the same for $\frac{2}{5}$ and $\frac{7}{8}$.

.....

9. Perform the calculations $\frac{\text{numerator} \times \text{numerator}}{\text{denominator} \times \text{denominator}}$ for

(a) $\frac{5}{6}$ and $\frac{7}{12}$

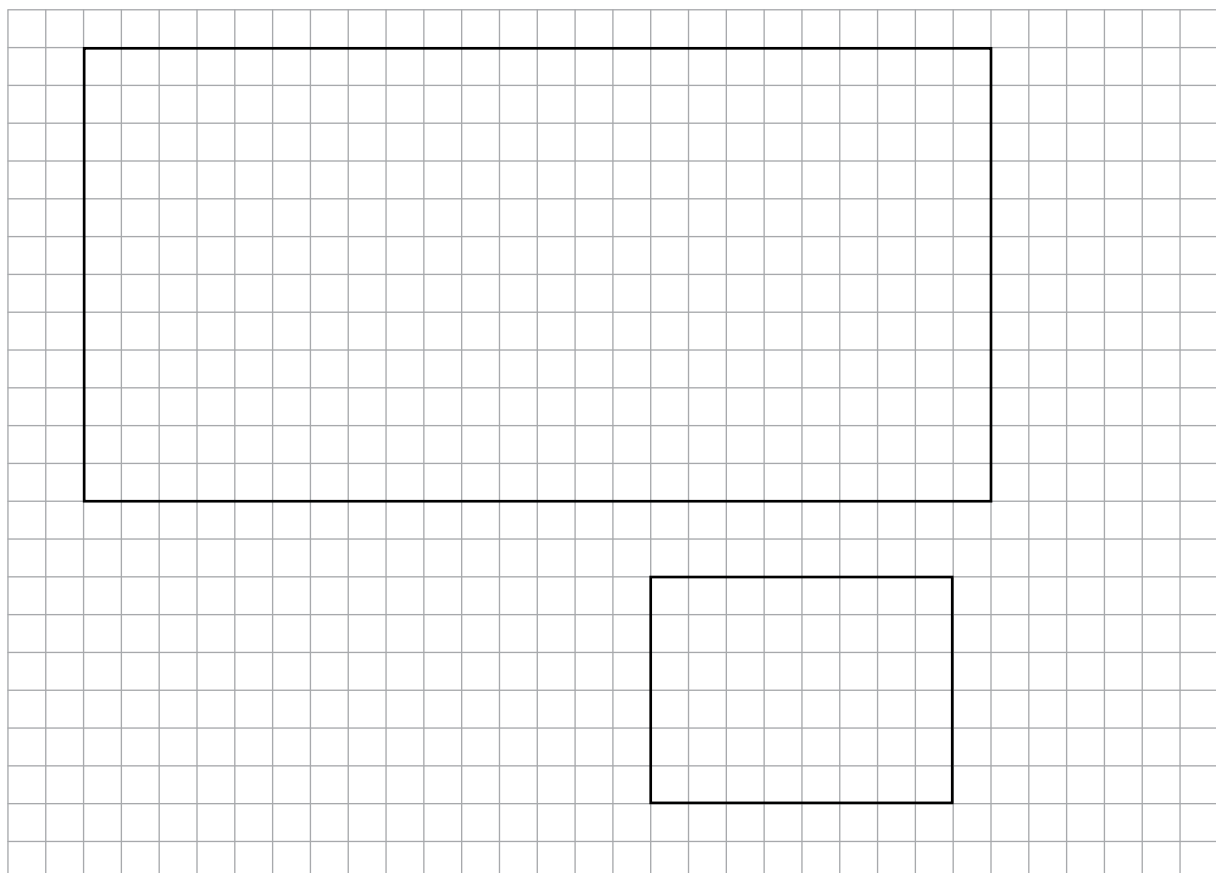
(b) $\frac{3}{4}$ and $\frac{2}{3}$

.....

10. Use the diagrams below to check whether the formula $\frac{\text{numerator} \times \text{numerator}}{\text{denominator} \times \text{denominator}}$ produces the correct answers for $\frac{5}{6} \times \frac{7}{12}$ and $\frac{3}{4} \times \frac{2}{3}$.

.....

.....



11. Calculate each of the following:

(a) $\frac{1}{2}$ of $\frac{1}{3}$ of R60

(b) $\frac{2}{7}$ of $\frac{2}{9}$ of R63

(c) $\frac{4}{3}$ of $\frac{2}{5}$ of R45

.....

12. (a) John normally practises soccer for three quarters of an hour every day. Today he practised for only half his usual time. How long did he practise today?

.....

.....

(b) A bag of peanuts weighs $\frac{3}{8}$ of a kilogram. What does $\frac{3}{4}$ of a bag weigh?

.....

(c) Calculate the mass of $7\frac{1}{2}$ packets of sugar if 1 packet has a mass of $\frac{3}{4}$ kg.

.....

.....

.....

6.8 Ordering and comparing fractions

1. Order the following from the smallest to the biggest:

(a) $\frac{7}{16}$; $\frac{3}{8}$; $\frac{11}{24}$; $\frac{5}{12}$; $\frac{23}{48}$

(b) $\frac{703}{1000}$; $\frac{13}{20}$; $\frac{7}{10}$; 73%; $\frac{71}{100}$

.....

.....

2. Order the following from the biggest to the smallest:

(a) $\frac{41}{60}$; $\frac{19}{30}$; $\frac{7}{10}$; $\frac{11}{15}$; $\frac{17}{20}$

(b) $\frac{23}{24}$; $\frac{2}{3}$; $\frac{7}{8}$; $\frac{19}{20}$; $\frac{5}{6}$

.....

.....

3. Use the symbols =, > or < to make the following true:

(a) $\frac{7}{17}$ $\frac{21}{51}$

(b) $\frac{1}{17}$ $\frac{1}{19}$

WORKSHEET

1. Do the calculations given below. Rewrite each question in the common fraction notation. Then write the answer in words and in the common fraction notation.

(a) 3 twentieths + 5 twentieths

(b) 5 twelfths + 11 twelfths

.....

.....

(c) 3 halves + 5 quarters

(d) 3 fifths + 3 tenths

.....

.....

2. Complete the equivalent fractions.

(a) $\frac{5}{7} = \frac{\square}{49}$

(b) $\frac{9}{11} = \frac{\square}{33}$

(c) $\frac{15}{10} = \frac{3}{\square}$

(d) $\frac{1}{9} = \frac{4}{\square}$

(e) $\frac{45}{18} = \frac{\square}{2}$

(f) $\frac{4}{5} = \frac{\square}{35}$

3. Do the calculations given below. Rewrite each question in words. Then write the answer in words and in the common fraction notation.

(a) $\frac{3}{10} + \frac{7}{30}$

(b) $\frac{2}{5} + \frac{7}{12}$

.....

.....

.....

(c) $\frac{1}{100} + \frac{7}{10}$

(d) $\frac{3}{5} - \frac{3}{8}$

.....

.....

.....

(e) $2\frac{3}{10} + 5\frac{9}{10}$

.....

.....

.....

WORKSHEET

4. Joe earns R5 000 per month. His salary increases by 12%. What is his new salary?

.....

5. Ahmed earned R7 500 per month. At the end of a certain month, his employer raised his salary by 10%. However, one month later his employer had to decrease his salary again by 10%. What was Ahmed's salary then?

.....

.....

6. Calculate each of the following and simplify the answer to its lowest form:

(a) $\frac{13}{20} - \frac{2}{5}$

(b) $3\frac{24}{100} - 1\frac{2}{10}$

.....

.....

(c) $5\frac{9}{11} - 2\frac{1}{4}$

(d) $\frac{2}{3} + \frac{4}{7}$

.....

.....

7. Evaluate.

(a) $\frac{1}{2} \times 9$

(b) $\frac{3}{5} \times \frac{10}{27}$

(c) $\frac{2}{3} \times 15$

(d) $\frac{2}{3} \times \frac{3}{4}$

.....

.....

.....

.....

8. Calculate.

(a) $2\frac{2}{3} \times 2\frac{2}{3}$

(b) $8\frac{2}{5} \times 3\frac{1}{3}$

.....

.....

(c) $(\frac{1}{3} + \frac{1}{2}) \times \frac{6}{7}$

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

.....

.....

(e) $\frac{5}{6} + \frac{2}{3} \times \frac{1}{5}$

(f) $\frac{3}{4} - \frac{2}{5} \times \frac{5}{6}$

.....

.....