# CHAPTER 3

*Fractions*

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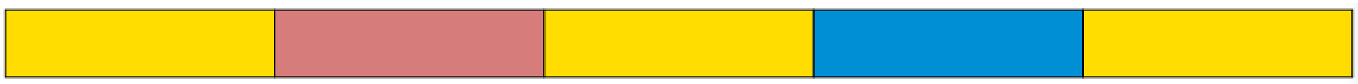
# 1 EQUIVALENT FRACTIONS

## 1.1 The same number in different forms

Did you notice that all the answers are the same? That is because $\frac{1}{5}$ , $\frac{2}{10}$ and $\frac{4}{20}$ are **equivalent fractions**. They are different ways of writing the same number.
Consider this bar. It is divided into five equal parts.



Each piece is **one fifth** of the whole bar.

In question 3(b) you found that $\frac{4}{5}$ is equivalent to $\frac{20}{25}$, these are just two different ways to describe the same part of the bar.
This can be expressed by writing $\frac{4}{5} = \frac{20}{25}$ which means that $\frac{4}{5}$ and $\frac{20}{25}$ are equivalent to each other.

**NOTE**

ou may divide the numerator and denominator by the same number, instead of multiplying the numerator and denominator by the same number. This gives you a simpler fraction.

The fraction $\frac{4}{12}$ is $\frac{1}{3}$, by dividing both the numerator and denominator by the common factor of $4$.

## 1.2 Converting between mixed numbers and fractions

Numbers that have both whole number and fraction parts are called **mixed numbers**.

Examples of mixed numbers are: $3\frac{4}{5}$,$2\frac{7}{8}$ and $8\frac{3}{10}$.

Mixed numbers can be written in expanded notation, for example:

$3\frac{4}{5}$ means $3 + \frac{4}{5}$

$2\frac{7}{8}$ means $2 + \frac{7}{8}$

$8\frac{3}{10}$ means $8 + \frac{3}{10}$

To add and subtract mixed numbers, you can work with the whole number parts and the fraction parts separately, for example:

$$\begin{aligned} & 3\frac{4}{5} + 13\frac{3}{5} \\ &= 16\frac{7}{5} \\ &= 17\frac{2}{5} \end{aligned}$$

For the next example we need to "borrow" a unit from 13, because we cannot subtract $\frac{4}{5}$ from $\frac{3}{5}$

$$\begin{aligned} & 13\frac{3}{5} - 3\frac{4}{5} \\ &= 12\frac{8}{5} - 3\frac{4}{5} \\ &= 9\frac{4}{5} \end{aligned}$$

However, this method can be difficult to do with some examples and it does not work with multiplication and division.

An alternative and preferred method is to convert the mixed number to an **improper fraction**, as shown in the example below:

**NOTE**

You can obtain the numerator of $19$ in one step by multiplying the denominator $(5)$ by the whole number $(3)$, and then adding the numerator $(4)$.

$$\begin{aligned} 3\frac{4}{5} &= 3 + \frac{4}{5} \\ &= \frac{15}{5} + \frac{4}{5} \\ &= \frac{19}{5} \end{aligned}$$

So you can calculate $3\frac{4}{5} + 13\frac{3}{5}$ using this method:

$$\begin{aligned} & 3\frac{4}{5} + 13\frac{3}{5} \\ &= \frac{19}{5} + \frac{68}{5} \\ &= \frac{87}{5} \end{aligned}$$

The answer must be converted to a mixed number again: $\frac{87}{5} = 17\frac{2}{5}$

# 2 ADDING AND SUBTRACTING FRACTIONS

To add or subtract two fractions, they have to be expressed with the *same* denominators first. To achieve that, one or more of the given fractions may have to be replaced with equivalent fractions.

$$\begin{aligned}&\frac{3}{20}+\frac{2}{5}\\&=\frac{5}{20}+\frac{2\times 4}{5\times 4}\text{ to get twentieths.}\\&=\frac{3}{20}+\frac{8}{20}\\&=\frac{11}{20}\end{aligned}$$

$$\begin{aligned}&\frac{5}{12}+\frac{7}{20}\\&=\frac{5+20}{12+20}+\frac{5\times 20}{12\times 20}\\&=\frac{100}{24}+\frac{84}{240}\\&=\frac{184}{240}\\&=\frac{23}{30}\end{aligned}$$

We will later refer to this method of adding or subtracting fractions as Method A.

In the case of $\frac{5}{12}+\frac{7}{20}$, multiplying by $20$ and by $12$ was a sure way of making equivalent fractions of the same kind, in this case two-hundred-and-fortieths. However, the numbers became quite big. Just imagine how big the numbers will become if you use the same method to calculate $\frac{17}{75}+\frac{13}{8}$!

Fortunately, there is a method of keeping the numbers smaller (in many cases), when making equivalent fractions so that fractions can be added or subtracted. In this method you first calculate the **lowest common multiple** or LCM of the denominators. In the case of $\frac{5}{12}+\frac{7}{20}$, the smaller multiples of the denominators are:

$12$: $12$; $24$; $36$; $48$; $60$; $72$; $84$

$20$: $20$; $40$; $60$; $80$; $100$; $120$; $140$

The smallest number that is a multiple of both $12$ and $20$ is $60$.

$\frac{5}{12}$ and $\frac{7}{20}$ can be expressed in terms of sixtieths:

$\frac{5}{12}=\frac{5\times 5}{12\times 5}=\frac{25}{60}$ because to make twelfths into sixtieths you have to divide each twelfth into $5$ equal parts, to get $12\times 5=60$ equal parts, i.e. sixtieths.

Similarly, $\frac{7}{20} = \frac{7 \times 3}{20 \times 3} = \frac{21}{60}$

Hence $\frac{5}{12} + \frac{25}{60} = \frac{25}{60} + \frac{21}{20} = \frac{46}{60} = \frac{23}{30}$

This method may be called the LCM method of adding or subtracting fractions.

# 3 MULTIPLYING AND DIVIDING FRACTIONS

**Set A:** $\frac{10}{10} \times \frac{5}{8} = \frac{50}{80}$

**Set B:** $\frac{5}{8} = \frac{50}{80}$. $50$ eightieths $\div 10 = \frac{5}{80}$

**Set C:** How many eighths in $10$ wholes? $80$ eighths. How many $5$-eighths in $80$? $80 \div 5 = 16$

**Set D:** $\frac{5}{8}$ is $5$ eighths. $10 \times 5$ eighths $= \frac{50}{8}$

**Set E:** $\frac{5}{8} \div 10 = \frac{5}{8} \times \frac{10}{1} = \frac{50}{8}$

Multiply a fraction by a whole number
**Example:**

$8 \times \frac{3}{5} = 8\times$ fifths $= 24$ fifths $= \frac{24}{5} = 4\frac{4}{5}$

Divide a fraction by a whole number

You can divide a fraction by converting it to an equivalent fraction with a numerator that is a multiple of the divisor.

**Example:**

$\frac{5}{8} \div 5 = \frac{5}{8} \div 5 = 10$ sixteenths $\div 5 = 2$ sixteenths $= \frac{2}{16} = \frac{1}{8}$

**Example:**

$\frac{2}{3} \times \frac{5}{8} = \frac{2}{3}$ of $\frac{15}{24} = \frac{1}{3}$ of $\frac{30}{24} = \frac{10}{24} = \frac{5}{12}$

The same answer is obtained by calculating $\frac{2}{5} \times \frac{3}{8}$

To multiply two fractions, you may simply multiply the numerators and the denominators.

$\frac{2}{3} \times \frac{9}{20} = \frac{2 \times 9}{3 \times 20} = \frac{18}{60} = \frac{3}{10}$

Division by a fraction

When we divide by a fraction, we have a very different situation. Think about this:

*If you have 40 pizzas, how many learners can have* $\frac{3}{5}$ *a pizza each?*

To find the number of fifths in $40$ pizzas: $40 \times 5 = 200$ fifths of a pizza.

To find the number of $3$-fifths: $200 \div 3 = 66$ portions of $35$ pizza and $2$ fifths of a pizza left over.

Since the portion for each learner is $3$ fifths, the $2$ fifths of a pizza that remains is $2$ thirds of a portion.

So, to calculate $40 \div 35$, we multiplied by $5$ and divided by $3$, and that gave us $66$ and $2$ thirds of a portion.

In fact, we calculated $40 \times 53$.

**NOTE**

Division is the inverse of multiplication.

So, to divide by a fraction, you multiply by its inverse.

**Example:**

$\frac{18}{60} \div \frac{2}{3} = \frac{18}{60} \times \frac{3}{2} = \frac{54}{120} = \frac{9}{20}$

# 4 SQUARES, CUBES, SQUARE ROOTS AND CUBE ROOTS

$\frac{9}{16}$ is the square of $\frac{3}{4}$ is the square root of , because $\frac{3}{4} \times \frac{3}{4} = \frac{9}{16}$. $\frac{3}{4}$ is the square root of $\frac{9}{16}$.

## 5 EQUIVALENT FORMS

NOTE

Instead of "$6$ hundredths" we may say "$6$ per cent" or, in short, "$6$ %". It means the same thing. $15$ per cent of the rectangle on the right is blue.

NOTE

$0,37$ and $37$ % and $\frac{37}{100}$ are different ways of writing the same value **(37 hundredths)**.

# 6 EXERCISES

## 6.1 Exercise 1

1. How much money is each of the following amounts?

   1.1 $\frac{1}{5}$ of R$200$

   1.2 $\frac{2}{10}$ of R$200$

   1.3 $\frac{4}{20}$ of R$200$

2. Consider a bar.

   Draw lines on the bar so that it is approximately divided into ten equal parts.

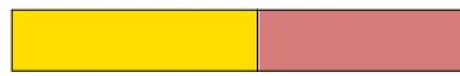
   2.1 What part of the whole bar is each of your ten parts?

   2.2 How many tenths is the same as one fifths?

   2.3 How many tenths is the same as two fifths?

   2.4 How many fifths is the same as eight tenths?

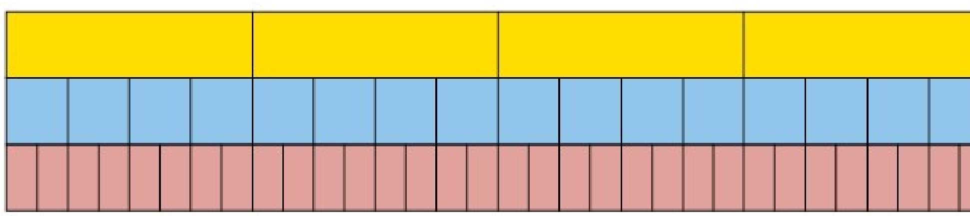
3. Draw lines on the bar below so that it is approximately divided into 25 equal parts.



   3.1 How many twenty-fifths is the same as two fifths?

   3.2 How many fifths is the same as eight tenths?

4. Write down all the other pairs of equivalent fractions which you found while doing questions 2 and 3.



5. The yellow bar is divided into fifths.

   5.1 Into what kind of fraction parts is the blue bar divided?

   5.2 Into what kind of fraction parts is the red bar divided?

   5.3 If you want to mark the yellow bar in twentieths (like the blue bar), into how many parts do you have to divide each of the fifths?

   5.4 If you want to mark the yellow bar in fortieths like the red bar, into how many parts do you have to divide each of the fifths?

5.5 If you want to mark the yellow bar in eightieths, into how many parts do you have to divide each of the fifths?

5.6 If you want to mark the blue bar in eightieths, into how many parts do you have to divide each of the twentieths?

6. Suppose this bar is divided into four equal parts, in other words, quarters.

6.1 If the bar is divide into 20 equal parts, how many of these smaller parts will there be in each quarter?

6.2 If each quarter is divided into six equal parts, what part of the whole bar will each small part be?

7. Copy and complete this table of equivalent fractions, as far as you can using whole numbers. All the fractions in each column must be equivalent.

| sixteenths | 8 | 4 | 2 | 10 | 14 | 12 |
|---|---|---|---|---|---|---|
| eighths | $D$ | | | | $E$ | |
| quarters | | $F$ | | | | |
| twelfths | | $B$ | | | | |
| twentieths | $A$ | | | | | $C$ |

8. Write down five different fractions that are equivalent to $\frac{3}{4}$

9. Express each of the following numbers as twelfths

9.1 $\frac{2}{3}$

9.2 $\frac{3}{4}$

9.3 $\frac{5}{6}$

9.4 $\frac{1}{6}$

10. Convert each of the following fractions to their simplest form

10.1 $\frac{40}{100}$

10.2 $\frac{4}{16}$

10.3 $\frac{5}{25}$

10.4 $\frac{6}{30}$

10.5 $\frac{6}{24}$

10.6 $\frac{8}{88}$

## 6.2 Exercise 2

1. Convert each of the following mixed numbers to improper fractions

   1.1 $5\frac{3}{5}$

   1.2 $2\frac{3}{8}$

   1.3 $3\frac{4}{7}$

   1.4 $4\frac{5}{12}$

2. Convert each of the following improper functions to mixed numbers

   2.1 $\frac{32}{5}$

   2.2 $\frac{25}{8}$

   2.3 $\frac{24}{9}$

   2.4 $\frac{37}{20}$

## 6.3 Exercise 3

1. Which method of adding and subtracting fractions do you think will be the easiest and quickest for you, Method A or the LCM method? Explain.

2. Calculate each of the following:

   2.1 $\frac{3}{8} + \frac{2}{5}$

   2.2 $\frac{3}{19} + \frac{7}{8}$

   2.3 $3\frac{2}{5} + 2\frac{3}{10}$

   2.4 $7\frac{3}{8} + 3\frac{11}{12}$

3. Calculate each of the following:

   3.1 $\frac{13}{20} - \frac{2}{5}$

   3.2 $\frac{7}{12} - \frac{1}{4}$

   3.3 $5\frac{1}{2} - 3\frac{3}{8}$

   3.4 $4\frac{1}{9} - 5\frac{2}{3}$

4. Paulo and Sergio buy a pizza. Paulo eats $\frac{1}{3}$ of the pizza and Sergio eats two fifths. How much of the pizza is left over?

5. Calculate each of the following. State whether you use Method A or the LCM method.

   5.1 $\frac{7}{15} + \frac{11}{24}$

5.2 $\frac{73}{100} - \frac{7}{75}$

5.3 $\frac{3}{25} + \frac{13}{40}$

5.4 $\frac{9}{16} - \frac{3}{10}$

5.5 $\frac{1}{18} + \frac{7}{20}$

5.6 $\frac{11}{35} - \frac{3}{14}$

5.7 $\frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8}$

## 6.4 Exercise 4

1. Read the questions below, but do not answer them now. Just describe in each case what calculations you think must be done to find the answer to the question. You can think later about how the calculations may be done.

   1.1 Ten people come to a party and each of them must get $\frac{5}{8}$ of a pizza. How many pizzas must be bought to provide for all of them?

   1.2 $\frac{5}{8}$ of the cost of a new clinic must be carried by the ten doctors who will work there. What part of the cost of the clinic must be carried by each of the doctors, if they have agreed to share the cost equally?

   1.3 If a whole pizza costs R$10$, how much does $\frac{5}{8}$ of a pizza cost?

   1.4 The owner of a spaza shop has ten whole pizzas. How many portions of $\frac{5}{8}$ of a pizza each can he make up from the ten pizzas?

2. Look at the different sets of calculations shown below **Set A**: $\frac{10}{10} \times \frac{5}{8} = \frac{50}{80}$
   **Set B**: $\frac{5}{8} = \frac{50}{80}$. $50$ eightieths $\div 10 = \frac{5}{80}$
   **Set C**: How many eighths in 10 wholes? 80 eighths. How many 5-eighths in $80$? $80 \div 5 = 16$
   **Set D**: $\frac{5}{8}$ is 5 eighths. $10 \times 5$ eighths $= \frac{50}{8}$
   **Set E**: $\frac{5}{8} \div 10 = \frac{5}{8} \times \frac{10}{1} = \frac{50}{8}$

   2.1 Which set of calculations is a correct way to find the answer for question $1.1$?

   2.2 Which set of calculations is a correct way to find the answer for question $1.2$?

   2.3 Which set of calculations is a correct way to find the answer for question $1.3$?

   2.4 Which set of calculations is a correct way to find the answer for question $1.4$?

## 6.5 Exercise 5

1. Calculate each of the following:

   1.1 $\frac{3}{4}$ of $\frac{12}{25}$

1.2 $\frac{3}{4} \times \frac{12}{100}$

1.3 $\frac{3}{4}$ of $\frac{13}{25}$

1.4 $\frac{3}{4} \times 1\frac{1}{2}$

1.5 $\frac{3}{20} \times \frac{5}{6}$

1.6 $\frac{3}{20}$ of $\frac{3}{20}$

2. A small factory manufactures copper pans for cooking. Exactly $\frac{3}{50}$ kg of copper needed to make one pan.

   2.1 How many pans can they make if $\frac{18}{50}$ kg of copper is available?

   2.2 How many pans can they make if $\frac{20}{50}$ kg of copper is available?

   2.3 How many pans can they make if $\frac{2}{5}$ kg of copper is available?

   2.4 How many pans can they make if $\frac{3}{4}$ kg of copper is available?

   2.5 How many pans can be made if $\frac{144}{50}$ kg of copper is available?

   2.6 How many pans can be made if 5 kg of copper is available?

3. Calculate each of the following:

   3.1 $\frac{18}{50} \div \frac{3}{50}$

   3.2 $\frac{9}{25} \div \frac{3}{50}$

   3.3 $\frac{144}{50} \div \frac{3}{50}$

   3.4 $2\frac{44}{50} \div \frac{3}{50}$

   3.5 $2\frac{22}{25} \div \frac{3}{50}$

   3.6 $\frac{5}{8} \div \frac{3}{50}$

   3.7 $20 \div \frac{3}{50}$

   3.8 $2 \div \frac{3}{50}$

   3.9 $1 \div \frac{3}{50}$

   3.10 $\frac{1}{2} \div \frac{3}{50}$

4. A rectangle is $3\frac{5}{8}$ cm long and $2\frac{3}{5}$ cm wide.

   4.1 What is the area of this rectangle?

   4.2 What is the perimeter of this rectangle?

5. A rectangle is $5\frac{5}{6}$ cm long and its area is $8\frac{1}{6}$ cm$^2$.
   How wide is this rectangle?

6. Calculate each of the following:

   6.1 $2\frac{3}{8}$ of $5\frac{4}{5}$

6.2 $3\frac{2}{7} \times 2\frac{7}{12}$

6.3 $8\frac{2}{5} \div 3\frac{3}{10}$

6.4 $3\frac{3}{10} \times 3\frac{3}{10}$

6.5 $2\frac{5}{8} \div 5\frac{7}{10}$

7. Calculate each of the following:

7.1 $\frac{2}{3}\left(\frac{3}{4} + \frac{7}{10}\right)$

7.2 $\frac{2}{3} \times \frac{3}{4} + \frac{2}{3} \times \frac{7}{10}$

7.3 $\frac{5}{8}\left(\frac{4}{5} - \frac{1}{3}\right)$

7.4 $\frac{5}{8} \times \frac{4}{5} - \frac{5}{8} \times \frac{1}{3}$

8. A piece of land with an area of 40 ha is divided into 30 equal plots. The total price of the land is R45000 . Remember that "ha" is the abbreviation for hectares.

8.1 Jim buys $\frac{2}{5}$ of the land.

8.1.1 How many plots is this and how much should he pay?

8.1.2 What is the area of the land that Jim buys?

8.2 Charlene buys $\frac{1}{3}$ of the land. How many plots is this and how much should she pay?

8.3 Bongani buys the rest of the land. Determine the fraction of the land that he buys.

## 6.6 Exercise 6

1. Calculate each of the following:

1.1 $\frac{3}{4} \times \frac{3}{4}$

1.2 $\frac{7}{10} \times \frac{7}{10}$

1.3 $2\frac{5}{8} \times 2\frac{5}{8}$

1.4 $1\frac{5}{12} \times 1\frac{5}{12}$

1.5 $3\frac{5}{7} \times 3\frac{5}{7}$

1.6 $10\frac{3}{4} \times 10\frac{3}{4}$

2. Find the square root of each of the following numbers:

2.1 $\sqrt{\frac{25}{49}}$

2.2 $\sqrt{\frac{36}{121}}$

2.3 $\sqrt{\frac{64}{25}}$

2.4 $\sqrt{2\frac{46}{49}}$

3. Calculate each of the following:

   3.1 $\frac{3}{4} \times \frac{3}{4} \times \frac{3}{4}$

   3.2 $\frac{7}{10} \times \frac{7}{10} \times \frac{7}{10}$

   3.3 $\frac{9}{10} \times \frac{9}{10} \times \frac{9}{10}$

   3.4 $\frac{5}{8} \times \frac{5}{8} \times \frac{5}{8}$

4. Find the cube root of each of the following numbers:

   4.1 $\sqrt[3]{\frac{27}{1000}}$

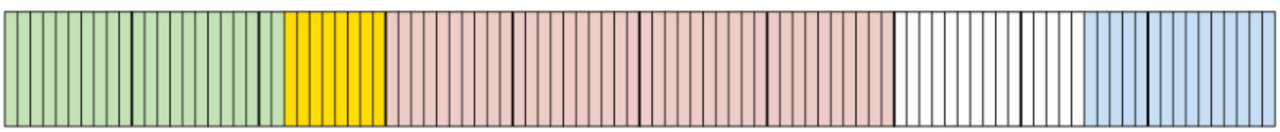
   4.2 $\sqrt[3]{\frac{125}{216}}$

   4.3 $\sqrt[3]{\frac{1000}{216}}$

   4.4 $\sqrt[3]{15\frac{5}{8}}$

## 6.7 Exercise 7

1. Consider the rectangle, divided into small parts.



   1.1 How many of these small parts are there in the rectangle?

   1.2 How many of these small parts are there in one tenth of the rectangle?

   1.3 What fraction of the rectangle is blue?

   1.4 What fraction of the rectangle is pink?

   1.5 What percentage of the rectangle is green?

   1.6 What percentage of the rectangle is pink?

2. Express each of the following in three ways, namely as a decimal, a percentage and a fraction (in simplest form):

   2.1 three tenths

   2.2 seven hundredths

   2.3 37 hundredths

   2.4 7 tenths

   2.5 two fifths

2.6 seven twentieths

3. Copy the table and fill in the missing values

| Decimal | Percentage | Common fraction (simplest form) |
|---|---|---|
| 0,2 | $D$ | $\frac{1}{5}$ |
| $A$ | $40\%$ | $\frac{2}{5}$ |
| 0,375 | $B$ | $\frac{3}{8}$ |
| 0,05 | 596 | $C$ |

4. 4.1 Jannie eats a quarter of a watermelon. What percentage of the watermelon is this?

   4.2 Sibu drinks $75\%$ of the milk in a bottle. What fraction of the milk in the bottle has he drunk?

   4.3 Jem used 0,18 of the paint in a tin. If he uses half of the remaining amount the next time he paints, what fraction (in simplest form) is left over?

# 7 ANSWERS FOR EXERCISES

## 7.1 Exercise 1

1. 1.1 R$40$

   1.2 R$40$

   1.3 R$40$

2. 2.1 One tenth

   2.2 Two tenths

   2.3 Four tenths

   2.4 Four fifths

3. 3.1 $10$ twenty-fifths

   3.2 Four fifths

4. 

5. 5.1 Twentieths

   5.2 Fortieths

   5.3 Four parts

   5.4 Eight parts

   5.5 $16$ parts

   5.6 Four parts

6. 6.1 $5$ parts

   6.2 One twenty-fourth

7. $A = 10$
   $B = 3$
   $C = 15$
   $D = 4$
   $E = 7$
   $F = 1$

8. $\frac{6}{8}; \frac{9}{12}; \frac{12}{16}; \frac{15}{20}; \frac{18}{24}$

9. 9.1 $\frac{8}{12}$

   9.2 $\frac{9}{12}$

9.3 $\frac{10}{12}$

9.4 $\frac{2}{12}$

10. 10.1 $\frac{2}{5}$

    10.2 $\frac{1}{4}$

    10.3 $\frac{1}{5}$

    10.4 $\frac{1}{5}$

    10.5 $\frac{1}{4}$

    10.6 $\frac{1}{11}$

## 7.2 Exercise 2

1. 1.1 $\frac{28}{5}$

   1.2 $\frac{19}{8}$

   1.3 $\frac{25}{7}$

   1.4 $\frac{53}{12}$

2. 2.1 $6\frac{2}{5}$

   2.2 $3\frac{1}{8}$

   2.3 $2\frac{2}{3}$

   2.4 $1\frac{17}{20}$

## 7.3 Exercise 3

1. 1.1 $\frac{31}{40}$

   1.2 $1\frac{7}{40}$

   1.3 $5\frac{7}{10}$

   1.4 $11\frac{7}{24}$

2. LCM method. Finding the LCM is the quickest method because I know the multiples.

3. 3.1 $\frac{1}{4}$

   3.2 $\frac{1}{3}$

   3.3 $2\frac{1}{8}$

   3.4 $-1\frac{5}{9}$

4. $\frac{4}{15}$ of the pizza

5. 5.1 $\frac{37}{40}$ LCM Method

   5.2 $\frac{191}{300}$ LCM method

   5.3 $\frac{89}{200}$ LCM method

   5.4 $\frac{21}{80}$ LCM method

   5.5 $\frac{73}{80}$ LCM method

   5.6 $\frac{1}{10}$ LCM method

   5.7 $6\frac{1}{4}$ There was a common denominator already

## 7.4 Exercise 4

1. 1.1 $10 \times \frac{5}{8}$

   1.2 $\frac{5}{8} \div 10$

   1.3 $\frac{5}{8}$ of R$10$

   1.4 $10 \div \frac{5}{8}$

2. 2.1 **Set D**: $\frac{5}{8}$ is 5 eighths. $10 \times 5$ eighths $= \frac{50}{8}$

   2.2 **Set B**: $\frac{5}{8} = \frac{50}{80}$. $50$ eightieths $\div 10 = \frac{5}{80}$

   2.3 **Set D**: $\frac{5}{8}$ is 5 eighths. $10 \times 5$ eighths $= \frac{50}{8}$

   2.4 **Set C**: How many eighths in 10 wholes? 80 eighths. How many 5-eighths in $80$? $80 \div 5 = 16$

## 7.5 Exercise 5

1. 1.1 $\frac{9}{25}$

   1.2 $\frac{9}{100}$

   1.3 $\frac{39}{100}$

   1.4 $1\frac{1}{8}$

   1.5 $\frac{1}{8}$

   1.6 $\frac{9}{400}$

2. 2.1 $6$ pans

   2.2 $\frac{6}{150}$ or $\frac{1}{25}$ kg of copper.

   2.3 they can make $6$ pans with $\frac{1}{25}$ kg of copper left over.

   2.4 so they can make $12$ pans with $\frac{3}{100}$ kg of copper left over.

   2.5 $48$ pans

   2.6 $83$ pans with $\frac{2}{100}$ kg of copper left over.

3. 3.1 $6$
   3.2 $6$
   3.3 $48$
   3.4 $48$
   3.5 $48$
   3.6 $10\frac{5}{12}$
   3.7 $333\frac{1}{3}$
   3.8 $33\frac{1}{3}$
   3.9 $16\frac{2}{3}$
   3.10 $8\frac{1}{3}$
4. 4.1 $9\frac{17}{40}$ cm$^2$
   4.2 $12\frac{9}{20}$ cm
5. $1\frac{2}{5}$
6. 6.1 $13\frac{31}{40}$
   6.2 $8\frac{41}{84}$
   6.3 $2\frac{6}{11}$
   6.4 $10\frac{89}{100}$
   6.5 $\frac{35}{76}$
7. 7.1 $\frac{29}{30}$
   7.2 $\frac{29}{30}$
   7.3 $\frac{7}{24}$
   7.4 $\frac{7}{24}$
8. 8.1 8.1.1 $12$ plots; R$18\ 000$
   8.1.2 $16$ ha
   8.2 $10$ plots; R$15\ 000$
   8.3 $\frac{4}{15}$

## 7.6 Exercise 6

1. 1.1 $\frac{9}{16}$
   1.2 $\frac{49}{100}$

1.3 $6\frac{57}{64}$

1.4 $2\frac{1}{144}$

1.5 $13\frac{39}{49}$

1.6 $115\frac{9}{16}$

2. 2.1 $\frac{5}{7}$

   2.2 $\frac{6}{11}$

   2.3 $1\frac{3}{5}$

   2.4 $1\frac{5}{7}$

3. 3.1 $\frac{27}{64}$

   3.2 $\frac{343}{1000}$

   3.3 $\frac{729}{1000}$

   3.4 $\frac{125}{512}$

4. 4.1 $\frac{3}{10}$

   4.2 $\frac{5}{6}$

   4.3 $1\frac{2}{3}$

   4.4 $2\frac{1}{2}$

## 7.7 Exercise 7

1. 1.1 $100$

   1.2 $10$

   1.3 $\frac{3}{20}$

   1.4 $\frac{2}{5}$

   1.5 $22\%$

   1.6 $40\%$

2. 2.1 $0{,}3; 30\%; \frac{3}{10}$

   2.2 $0{,}07; 7\%; \frac{7}{100}$

   2.3 $0{,}37; 37\%; \frac{37}{100}$

   2.4 $0{,}7; 70\%; \frac{7}{10}$

   2.5 $0{,}4; 40\%; \frac{2}{5}$

   2.6 $0{,}35; 35\%; \frac{7}{20}$

3. $A = 0{,}4$, $B = 37{,}5\%$, $C = \frac{1}{20}$, $D = 20\%$

4. 4.1 $25\%$

   4.2 $\frac{3}{4}$

   4.3 $\frac{41}{100}$