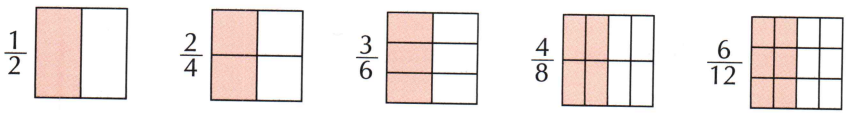
3.1 Equivalent Fractions

Fractions are a way of writing an amount as one number divided by another. Because different divisions can give the same answer (e.g. 1 ÷ 3 is the same as 2 ÷ 6), different fractions can have the same value.

Equivalent Fractions

Learning Objective — Spec Ref N3:
Be able to find equivalent fractions.

There are lots of **different ways** to write the **same amount** using fractions — these are known as **equivalent fractions**. For example, one half is the same as two quarters, three sixths, etc. You can show this visually:



Tip: Notice that the same amount of the shape is shaded in each diagram.

To find an equivalent fraction, **multiply** or **divide** the **numerator** (the top number) and **denominator** (the bottom number) by the **same thing**.

Example 1

Find the value of b if $\frac{12}{30} = \frac{4}{b}$.

1. Find what you need to divide by to get from one numerator to the other.
2. Divide the denominator by the same number.

$\frac{12}{30} = \frac{4}{b}$ (÷ 3)

$\frac{12}{30} = \frac{4}{10}$ (÷ 3)

So $b = 10$.

Exercise 1

Q1 Find the values of the letters in the following fractions.

a) $\frac{1}{5} = \frac{a}{10}$ b) $\frac{1}{4} = \frac{b}{12}$ c) $\frac{3}{4} = \frac{c}{16}$ d) $\frac{1}{20} = \frac{d}{60}$

e) $\frac{1}{5} = \frac{5}{e}$ f) $\frac{1}{6} = \frac{3}{f}$ g) $\frac{7}{12} = \frac{35}{g}$ h) $\frac{9}{10} = \frac{81}{h}$

Q2 Find the values of the letters in the following fractions.

a) $\frac{1}{a} = \frac{5}{15}$ b) $\frac{3}{b} = \frac{12}{20}$ c) $\frac{c}{3} = \frac{10}{15}$ d) $\frac{d}{14} = \frac{9}{42}$

e) $\frac{e}{9} = \frac{15}{27}$ f) $\frac{f}{51} = \frac{9}{17}$ g) $\frac{11}{g} = \frac{55}{80}$ h) $\frac{1}{h} = \frac{11}{121}$

Q3 Sharon and Dev both take a test. Sharon gets $\frac{4}{6}$ of the questions right and Dev gets $\frac{37}{42}$ of the questions right. Who gets the most questions right?

PROBLEM SOLVING

3.2 Mixed Numbers

So far, all of the fractions you've had to deal with have been smaller than 1. You can write numbers that are bigger than 1 as fractions in two different ways — either as mixed numbers or as improper fractions.

Learning Objective — Spec Ref N2:
Be able to convert between mixed numbers and improper fractions.

A **mixed number** has a whole number part and a fraction part — e.g. $2\frac{1}{2}$.

A fraction where the numerator is **bigger** than the denominator is called an **improper fraction** — e.g. $\frac{5}{2}$.

Example 1

Write: a) $4\frac{3}{5}$ as an improper fraction, b) $\frac{13}{5}$ as a mixed number.

a) 1. Find the fraction which is equivalent to 4 and has 5 as the denominator.

$$4 = \frac{4}{1} \overset{\times 5}{=} \frac{20}{5}$$

2. Combine the two fractions into one improper fraction by adding the numerators.

So $4\frac{3}{5} = \frac{20}{5} + \frac{3}{5} = \mathbf{\frac{23}{5}}$

b) 1. Split the numerator into a multiple of the denominator plus a remainder: $13 \div 5 = 2$ remainder 3, so $13 = (2 \times 5) + 3$.

2. Separate the fraction to write it as a mixed number.

$$\frac{13}{5} = \frac{(2\times 5)+3}{5} = \frac{10+3}{5}$$
$$= \frac{10}{5} + \frac{3}{5} = 2 + \frac{3}{5} = \mathbf{2\frac{3}{5}}$$

Exercise 1

Q1 Find the values of the letters by writing the following mixed numbers as improper fractions.

a) $1\frac{1}{3} = \frac{a}{3}$ b) $1\frac{2}{7} = \frac{b}{7}$ c) $4\frac{1}{2} = \frac{c}{2}$ d) $3\frac{4}{7} = \frac{d}{7}$

Q2 Write the following mixed numbers as improper fractions.

a) $1\frac{4}{5}$ b) $1\frac{5}{12}$ c) $2\frac{9}{10}$ d) $4\frac{3}{4}$

e) $12\frac{2}{5}$ f) $15\frac{5}{7}$ g) $3\frac{1}{9}$ h) $10\frac{3}{10}$

Q3 a) Simplify the improper fraction $\frac{26}{4}$.

b) Use your answer to write $\frac{26}{4}$ as a mixed number in its lowest terms.

Q4 Write, as a mixed number in its lowest terms:

a) $\frac{5}{3}$ b) $\frac{9}{5}$ c) $\frac{17}{10}$ d) $\frac{12}{7}$

e) $\frac{13}{6}$ f) $\frac{18}{12}$ g) $\frac{50}{15}$ h) $\frac{24}{18}$

i) 13 as a fraction of 11 j) 35 as a fraction of 25 k) 51 as a fraction of 12 l) 98 as a fraction of 8

Q5 Find the number in each list that is not equivalent to the other two.

a) $\frac{6}{4}, \frac{5}{2}, 1\frac{1}{2}$ b) $2\frac{1}{3}, \frac{7}{3}, 3\frac{1}{2}$, c) $\frac{15}{4}, \frac{19}{4}, 4\frac{3}{4}$ d) $2\frac{2}{3}, \frac{11}{3}, \frac{16}{6}$

3.4 Adding and Subtracting Fractions

To be able to add and subtract fractions, you need to be able to do everything in this section so far. Finding common denominators is particularly important, so make sure you're happy with that.

Adding and Subtracting Fractions

Learning Objective — Spec Ref N2:
Be able to add and subtract fractions.

If you want to add or subtract fractions, you need to get them over a **common denominator** (see the previous page). Once they have the same denominator, you can just add or subtract the **numerators**. Finally, **simplify** the fraction if necessary.

Example 1

In a maths exam, $\frac{1}{8}$ of the questions are on number topics, $\frac{1}{3}$ of the questions are on algebra, and the rest are on geometry. What fraction of the questions are geometry questions?

1. The fractions of number questions, algebra questions and geometry questions must add up to 1.

   Fraction of geometry questions $= 1 - \frac{1}{8} - \frac{1}{3}$

2. Put the fractions over a common denominator.

   $1 = \frac{24}{24}$ $\quad \frac{1}{8} = \frac{3}{24}$ ($\times 3$) $\quad \frac{1}{3} = \frac{8}{24}$ ($\times 8$)

3. Subtract the numerators to find the fraction of geometry questions.

   $\frac{24}{24} - \frac{3}{24} - \frac{8}{24} = \frac{24-3-8}{24} = \mathbf{\frac{13}{24}}$

Exercise 1

Q1 Work out the following. Give your answers as mixed numbers in their simplest form.

a) $\frac{2}{3} - \frac{1}{4}$ b) $\frac{2}{3} + \frac{4}{5}$ c) $\frac{9}{10} - \frac{5}{6}$ d) $\frac{3}{7} + \frac{3}{4}$

e) $\frac{6}{11} + \frac{7}{9}$ f) $\frac{8}{9} + \frac{12}{21}$ g) $\frac{6}{7} - \frac{3}{5}$ h) $\frac{15}{16} + \frac{3}{5}$

Q2 Work out the following. Give your answers as mixed numbers in their simplest form.

a) $\frac{1}{9} + \frac{5}{9} + \frac{11}{18}$ b) $1 - \frac{2}{10} - \frac{2}{8}$ c) $\frac{3}{4} + \frac{1}{8} - \frac{7}{16}$ d) $\frac{6}{7} + \frac{1}{14} - \frac{1}{2}$

e) $\frac{1}{4} + \frac{2}{3} + \frac{5}{6}$ f) $\frac{1}{5} + \frac{1}{3} + \frac{3}{15}$ g) $\frac{9}{10} - \frac{5}{6} + \frac{3}{12}$ h) $\frac{1}{6} + \frac{5}{7} - \frac{1}{3}$

Q3 In a school survey, $\frac{1}{2}$ of the pupils said they walk to school. $\frac{1}{5}$ said they catch the bus. The rest arrive by car. What fraction come to school by car?

Q4 A bag contains a mixture of sweets. $\frac{2}{9}$ of the sweets are white chocolates, $\frac{1}{12}$ of the sweets are milk chocolates, $\frac{1}{5}$ are toffees and the rest are mints. What fraction of the sweets are mints?

3.5 Multiplying and Dividing by Fractions

Being able to multiply by fractions is really useful — especially as it lets you find fractions of amounts. In order to divide by fractions, you need to be able to find the reciprocal of the fraction you're dividing by.

Multiplying Whole Numbers by Fractions

Learning Objectives — Spec Ref N2/N12:

- Be able to multiply whole numbers by fractions.
- Be able to find fractions of amounts.

Prior Knowledge Check:
Be able to simplify fractions (p.28) and convert between mixed numbers and improper fractions (p.29).

To multiply a whole number by a fraction, **multiply** it by the **numerator**, and **divide** it by the **denominator**. It doesn't matter what **order** you do the multiplication and division in — sometimes it's easier to do the **division first** as it keeps the numbers **smaller**, but either way will give the same result.

If the number **isn't a multiple** of the fraction's **denominator**, then your final answer will be a **fraction**. In this case, just multiply the number by the **numerator** of the fraction, write it **over the denominator**, then **simplify** as much as possible.

Finding **fractions of amounts** is the same as multiplying — e.g. $\frac{2}{3}$ of 60 is the same as $\frac{2}{3} \times 60$.

Example 1

Calculate $21 \times \frac{4}{7}$.

1. You need to multiply by 4 and divide by 7. Do the division first...
2. ...then multiply the answer by 4.

$$21 \times \frac{4}{7} = (21 \div 7) \times 4$$
$$= 3 \times 4 = \mathbf{12}$$

Tip: If you multiplied first instead, you'd get: $(21 \times 4) \div 7 = 84 \div 7 = 12$

Example 2

Find $\frac{3}{4}$ of 18. Give your answer as a mixed number in its simplest form.

1. You can replace 'of' with a multiplication sign.
2. Since 18 isn't a multiple of 4, do 3×18 and write this on the top of the fraction.
3. Simplify the fraction and convert to a mixed number.

$$\frac{3}{4} \text{ of } 18 = \frac{3}{4} \times 18$$
$$\frac{3}{4} \times 18 = \frac{3 \times 18}{4} = \frac{54}{4}$$
$$\frac{54}{4} = \frac{27}{2} = \frac{26+1}{2} = \mathbf{13\frac{1}{2}}$$

Exercise 1

Q1 Find the following.

a) $28 \times \frac{3}{4}$ b) $\frac{2}{9}$ of 36 c) $\frac{3}{8} \times 48$ d) $\frac{5}{12}$ of 60

e) $\frac{5}{6} \times 24$ f) $15 \times \frac{4}{5}$ g) $\frac{5}{6}$ of 54 h) $96 \times \frac{7}{12}$

Q2 Work out the following. Write your answers as mixed numbers in their simplest form.

a) $48 \times \frac{2}{7}$ b) $27 \times \frac{1}{6}$ c) $32 \times \frac{2}{3}$ d) $34 \times \frac{4}{5}$

e) $80 \times \frac{2}{9}$ f) $45 \times \frac{5}{12}$ g) $72 \times \frac{3}{11}$ h) $62 \times \frac{5}{8}$

Dividing by Fractions

Learning Objectives — Spec Ref N2/N12:
- Be able to find the reciprocal of a number or fraction.
- Be able to divide by fractions and mixed numbers.

The **reciprocal** of a number is just **1 ÷ that number**. The reciprocal of a **whole number** is always a **unit fraction** (a fraction with a **numerator of 1**) — e.g. the reciprocal of 4 is $\frac{1}{4}$.
Also, if a is the reciprocal of b, then b is the reciprocal of a — so the reciprocal of $\frac{1}{4}$ is 4.

To find the reciprocal of a **fraction**, **swap the numerator and denominator** (i.e. turn it **upside down**) — for example, the reciprocal of $\frac{3}{5}$ is $\frac{5}{3}$. If it's a mixed number, convert it to an improper fraction first.

Dividing by a number is the same as **multiplying** by its **reciprocal** (e.g. $6 \div 4 = 6 \times \frac{1}{4}$).
So, to divide by a **fraction**, you can just turn the fraction **upside down** and change the ÷ into a ×.
Once you've got a multiplication, the method is exactly the same as on the previous page.

Example 5

Find: a) $\frac{1}{4} \div \frac{6}{13}$, b) $2\frac{2}{3} \div 1\frac{1}{5}$ as a mixed number in its lowest terms.

a) 1. Dividing by $\frac{6}{13}$ is the same as multiplying by its reciprocal, so flip the $\frac{6}{13}$ upside down and change the ÷ into a ×.

$$\frac{1}{4} \div \frac{6}{13} = \frac{1}{4} \times \frac{13}{6}$$

2. Now you can multiply the fractions as on p.34.

$$= \frac{1 \times 13}{4 \times 6} = \mathbf{\frac{13}{24}}$$

b) 1. Write both numbers as improper fractions.

$$2\frac{2}{3} = \frac{6+2}{3} = \frac{8}{3} \qquad 1\frac{1}{5} = \frac{5+1}{5} = \frac{6}{5}$$

2. Flip the $\frac{6}{5}$ upside down and change the ÷ into a ×.

$$\frac{8}{3} \div \frac{6}{5} = \frac{\cancel{8}^{4}}{3} \times \frac{5}{\cancel{6}_{3}} = \frac{4}{3} \times \frac{5}{3} = \frac{4 \times 5}{3 \times 3} = \frac{20}{9}$$

3. Convert your answer into a mixed number.

$$\frac{20}{9} = \frac{18+2}{9} = \mathbf{2\frac{2}{9}}$$

Exercise 3

Q1 Find the reciprocal of the following, giving your answer as an improper fraction where appropriate.

a) 7 b) $\frac{1}{11}$ c) $\frac{7}{6}$ d) $\frac{3}{26}$

e) $1\frac{11}{12}$ f) $2\frac{3}{4}$ g) $5\frac{2}{3}$ h) $4\frac{2}{7}$

Q2 Work out the following. Give your answers in their lowest terms.

a) $\frac{4}{13} \div \frac{1}{3}$ b) $\frac{2}{25} \div \frac{1}{5}$ c) $\frac{2}{5} \div \frac{2}{3}$ d) $\frac{3}{4} \div \frac{9}{10}$

e) $\frac{5}{7} \div \frac{11}{14}$ f) $\frac{2}{5} \div 3$ g) $\frac{3}{7} \div 6$ h) $7 \div \frac{15}{2}$

Q3 Work out the following. Give your answers as mixed numbers in their lowest terms.

a) $2\frac{1}{2} \div \frac{1}{3}$ b) $1\frac{1}{6} \div \frac{1}{4}$ c) $2\frac{3}{7} \div 3$ d) $4\frac{4}{9} \div 6$

e) $\frac{2}{3} \div 3\frac{2}{5}$ f) $4\frac{1}{6} \div \frac{15}{16}$ g) $1\frac{1}{4} \div 1\frac{1}{5}$ h) $3\frac{3}{10} \div 2\frac{1}{7}$

Converting Fractions to Decimals Without Using a Calculator

The method you use to convert a fraction to a decimal **without a calculator** depends on whether it's a **terminating** or a **recurring** decimal. You can tell which kind of decimal a fraction will give by looking at the **denominator** when the fraction is in its **lowest terms**:

- If the **only prime factors** (see p.10) of the denominator are **2 or 5** (or both), then the fraction will become a **terminating decimal**. For example, $20 = 2 \times 2 \times 5$, and $\frac{1}{20} = 0.05$.
- If the denominator has any prime factors **other than 2 or 5**, then the fraction will become a **recurring decimal**. For example, $6 = 2 \times 3$, and $\frac{1}{6} = 0.1\dot{6}$.

If you know that a fraction will give you a terminating decimal, then you can convert it to a decimal by finding an **equivalent fraction** with a **denominator** of **10**, **100**, **1000**, etc. Then the **numerator** of the equivalent fraction goes **after the decimal point**. Be careful with the **place value** — the decimal should have the same number of **decimal places** as the denominator has **zeros**.
For example, a denominator of **1000** would give a decimal with **3 d.p.**: $\frac{1}{1000} = 0.001$, $\frac{12}{1000} = 0.012$, etc.

Example 2

Write $\frac{23}{250}$ as a decimal.

Multiply top and bottom to find an equivalent fraction with a denominator of 1000. Then put the numerator after the decimal point — it should have 3 d.p., so put a 0 in front of the 92.

$$\frac{23}{250} \overset{\times 4}{=} \frac{92}{1000} = \mathbf{0.092}$$

You can also convert a fraction to a terminating decimal by **dividing** the numerator by the denominator using **short division**. You'll have to keep putting **zeros** after the decimal point until the answer terminates.

Example 3

Use short division to write $\frac{1}{8}$ as a decimal.

You need to work out $1 \div 8$.

1. 8 doesn't go into 1, so carry the 1.
2. 8 goes into 10 once, with remainder 2.
3. 8 goes into 20 twice, with remainder 4.
4. 8 goes into 40 exactly 5 times.

$$8\overline{)1.^{1}0^{2}0^{4}0} \quad 0.125$$

So $\frac{1}{8} = \mathbf{0.125}$

Tip: To do the division, write 1 as 1.000...

Exercise 2

Q1 Write the following fractions as decimals.

a) $\frac{46}{100}$ b) $\frac{492}{1000}$ c) $\frac{9}{30}$ d) $\frac{17}{50}$

e) $\frac{3}{5}$ f) $\frac{22}{25}$ g) $\frac{333}{500}$ h) $\frac{123}{200}$

Q2 Use short division to write the following fractions as decimals.

a) $\frac{1}{16}$ b) $\frac{7}{8}$ c) $\frac{1}{125}$ d) $\frac{3}{32}$

e) $\frac{21}{32}$ f) $\frac{7}{16}$ g) $\frac{9}{125}$ h) $\frac{53}{8}$

Converting **recurring decimals** into fractions is a bit trickier, but there's a handy method you can use:

- Call the recurring decimal a **letter** — say, r.
- Multiply r by 10, 100, 1000, etc. to move **one whole chunk** of the repeated pattern **to the left** of the decimal point.
- **Subtract** r from this to get rid of the decimal part. You'll be left with 'multiple of r = whole number'.
- **Rearrange** so that you have 'r = fraction'. **Simplify** if necessary.

If the recurring pattern doesn't start **right after** the decimal point, **multiply** by a power of 10 so that it does. Then continue with the usual method, except you'll subtract **10*r*** (or 100r, 1000r, etc.) instead of just r.

Example 6

Convert the recurring decimal 0.171717... into a fraction.

1. Call the recurring decimal r. $r = 0.171717...$
2. Multiply r by 100 to get one whole chunk of the repeating pattern (a '17') on the left of the decimal point. $100r = 17.171717...$
3. Subtract your original number, r. $100r - r = 17.1717... - 0.1717...$
4. Rearrange the equation to find r as a fraction. $99r = 17 \Rightarrow r = \mathbf{\frac{17}{99}}$

Example 7

Convert the recurring decimal $0.1\dot{2}\dot{3}$ into a fraction.

1. Call the recurring decimal r. $r = 0.1232323...$
2. Multiply by 10 so that the recurring part starts right after the decimal point. $10r = 1.232323...$
3. Multiply again to get one whole chunk of the repeating pattern on the left of the decimal point. $1000r = 123.232323...$
4. Subtract 10r from 1000r. $1000r - 10r = 123.2323... - 1.2323...$
   $990r = 122$
5. Rearrange into a fraction and simplify. $r = \frac{122}{990} = \mathbf{\frac{61}{495}}$ (÷ 2 top and bottom)

Exercise 4

Q1 Write each of the following decimals as a fraction in its simplest form.

a) 0.12 b) 0.084 c) 0.375 d) 0.7654321

Q2 Write each of the following recurring decimals as a fraction in its simplest form.

a) $0.\dot{1}$ b) $0.\dot{3}\dot{4}$ c) 0.181818...

d) $0.\dot{8}6\dot{3}$ e) 0.207207207... f) 0.72007200...

Q3 Write each of the following recurring decimals as a fraction in its simplest form.

a) 0.5444444... b) $0.8\dot{7}\dot{2}$ c) 0.0121212...

d) $0.0\dot{7}\dot{5}$ e) $0.00\dot{4}\dot{5}$ f) 0.3373737...

Review Exercise

Q1 Simplify the following fractions: a) $\frac{21}{35}$ b) $\frac{36}{126}$ c) $\frac{70}{182}$

Q2 Convert each of the following to a mixed number:

a) $\frac{37}{27}$ b) $\frac{89}{5}$ c) $\frac{230}{11}$ d) $\frac{135}{19}$

Q3 Which of the fractions on the right is closest to $\frac{3}{4}$? $\frac{11}{15}$ $\frac{7}{10}$ $\frac{4}{5}$ $\frac{5}{6}$

Q4 In Ancient Egypt, fractions were written using sums of unit fractions.
For example, instead of writing $\frac{3}{5}$, Ancient Egyptians would write $\frac{1}{2}+\frac{1}{10}$.

a) Find the fractions that Ancient Egyptians could have written in the following ways.

(i) $\frac{1}{3}+\frac{1}{12}$ (ii) $\frac{1}{2}+\frac{1}{3}+\frac{1}{7}$ (iii) $\frac{1}{2}+\frac{1}{5}+\frac{1}{20}$

b) Find the values of the letters in the following equations.

(i) $\frac{9}{20}=\frac{1}{a}+\frac{1}{5}$ (ii) $\frac{11}{18}=\frac{1}{3}+\frac{1}{b}+\frac{1}{9}$ (iii) $\frac{301}{600}=\frac{1}{2}+\frac{1}{c}$

Q5 A plank of wood is 20 inches long. Three pieces of length $7\frac{3}{4}$ inches, $5\frac{5}{16}$ inches and $2\frac{1}{8}$ inches are cut from the plank. What length of wood is left over?

Q6 It takes Ella $1\frac{1}{4}$ minutes to answer each question on her maths homework.
How many questions can she answer in 20 minutes?

Q7 What numbers need to go in the boxes to make the following true?

a) $\frac{2}{5}$ of 100 = $\square$ of 50 b) $\frac{3}{4}$ of $\square$ = $\frac{2}{3}$ of 90 c) $\frac{1}{4}$ of 64 = $\frac{1}{7}$ of $\square$

Q8 a) Convert the fractions $\frac{39}{100}$, $\frac{7}{20}$, $\frac{8}{25}$ and $\frac{3}{10}$ into decimals.

b) Put the fractions in order, from smallest to largest.

Q9 Which of the fractions $\frac{5}{6}$, $\frac{4}{5}$, $\frac{2}{9}$, $\frac{9}{16}$ and $\frac{17}{40}$ are equivalent to recurring decimals?

Q10 Show that: a) $\frac{24}{112}$ is not equivalent to $\frac{3}{8}$. b) $\frac{1}{5}$ is not one third of $\frac{1}{15}$.

c) $\frac{1}{4}$ is not halfway between $\frac{1}{2}$ and $\frac{1}{5}$. d) $\frac{8}{9}$ is greater than $0.\dot{8}\dot{7}$.

Q11 Put each set of quantities in order, from smallest to largest.

a) $\frac{8}{16}$, $\frac{6}{11}$, $0.5\dot{4}$, $\frac{5}{9}$ b) $\frac{51}{100}$, $\frac{102}{204}$, $0.4\dot{6}$, $\frac{8}{15}$

Exam-Style Questions

Q1 Show that $4\frac{1}{2} \div 1\frac{2}{5} = 3\frac{3}{14}$.

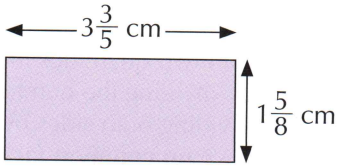
[3 marks]

Q2 $\frac{1}{6}$ of the flowers in a garden are roses, $\frac{3}{24}$ of the flowers are tulips, $\frac{3}{8}$ are daisies and the rest are daffodils. What fraction of the flowers are daffodils?

[2 marks]

Q3 A rectangle has a length of $3\frac{3}{5}$ cm and a width of $1\frac{5}{8}$ cm. Find, as a mixed number in its lowest terms:

a) the perimeter of the rectangle,



[2 marks]

b) the area of the rectangle.

[2 marks]

Q4 Use algebra to clearly show that $0.3181818... = \frac{7}{22}$.

[3 marks]

Q5 To go on a roller coaster ride, you must be at least $1\frac{1}{3}$ m tall.


- Jess is $1\frac{1}{2}$ m tall.
- Eric's height is $\frac{8}{9}$ of Jess's height.
- Xin is $\frac{2}{7}$ m shorter than Jess.
- Abbas is 1.3 m tall.

Which of the friends can go on the ride?

[4 marks]

Q6 Quinn buys a console game in a sale where he gets $\frac{1}{4}$ off the normal price. If he paid £21.99 in the sale, work out the normal price of the game.


[3 marks]

Q7 Work out the reciprocal of $2.\dot{6}$, giving your answer as a decimal.

[4 marks]