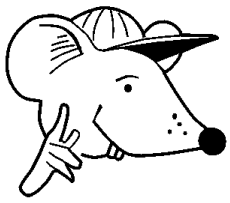
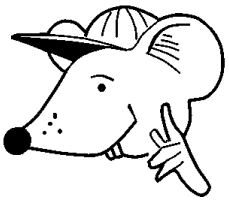


MATHEMATICS



Y4 Multiplication and Division

4350

Understand remainders
Relate fractions to division

Equipment

Paper, pencil, ruler
Calculator

MathSphere

 www.mathsphere.co.uk

Concepts

A number of different concepts are vital to understanding this module.

1.Completing a division sum by using a fraction rather than a remainder
e.g. 11 ÷ 2 = 5 remainder 1 = 5 ½

2. Completing a division sum by using a decimal fraction rather than a remainder
e.g. 11 ÷ 2 = 5 remainder 1 = 5.5
This would only be done when dividing by 10, 5, 4 or 2 and children should be expected to know these simple conversions – see page 6.

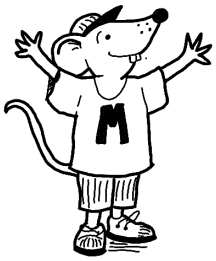
3. Interpreting a calculator display in the context of money.
e.g. recognising that 3.3 on the calculator would mean £3.30.

4. Rounding decimals shown on a calculator display – knowing that the number is between two whole numbers.
e.g. 43.33333333 is between 43 and 44

5. Knowing whether to round up or down when working out division problems.
e.g. of rounding up:
I have 25 cakes. Boxes hold 10 cakes.
How many boxes do I need to hold all the cakes?

e.g. of rounding down
I have 25 cakes. Boxes hold 10 cakes.
How many boxes can I fill with cakes?

Remainders as a fraction



Did you know that remainders can be written as fractions?

21 ÷ 5 = 4 remainder 1 or $\frac{1}{5}$

It's quite easy to work out – the remainder goes on the top line (numerator) and the bottom number (denominator) is the number you have divided by.

37 ÷ 5 = 7 remainder 2 or $\frac{2}{5}$

1. 22 ÷ 5 = 4 remainder ☐ or 4 $\frac{\square}{\square}$

2. 32 ÷ 10 = 3 remainder ☐ or 3 $\frac{\square}{\square}$

3. 27 ÷ 5 = 5 remainder ☐ or 5 $\frac{\square}{\square}$

4. 28 ÷ 3 = 9 remainder ☐ or 9 $\frac{\square}{\square}$

5. 26 ÷ 4 = 6 remainder ☐ or 6 $\frac{\square}{\square}$

6. 84 ÷ 9 = 9 remainder ☐ or 9 $\frac{\square}{\square}$

Remainders as fractions

Workout these division sums, giving the remainder as a fraction.
e.g. $34 \div 10 = 3$ remainder $4 = 3\ ^{4}/_{10}$

1. $17 \div 2 =$ ☐

2. $23 \div 3 =$ ☐

3. $39 \div 5 =$ ☐

4. $29 \div 6 =$ ☐

5. $44 \div 10 =$ ☐

6. $53 \div 9 =$ ☐

7. $31 \div 4 =$ ☐

8. $77 \div 8 =$ ☐

9. $19 \div 7 =$ ☐

10. $29 \div 4 =$ ☐

11. $41 \div 6 =$ ☐

12. $39 \div 8 =$ ☐

13. $34 \div 9 =$ ☐

14. $48 \div 5 =$ ☐

Remainders as fractions

Workout these division sums, giving the remainder as a fraction.
e.g. $26 \div 10 = 2$ remainder $6 = 2\ {}^{6}/_{10}$

1. $25 \div 2 =$ ☐

2. $26 \div 3 =$ ☐

3. $34 \div 5 =$ ☐

4. $25 \div 6 =$ ☐

5. $55 \div 10 =$ ☐

6. $33 \div 9 =$ ☐

7. $18 \div 4 =$ ☐

8. $37 \div 8 =$ ☐

9. $52 \div 7 =$ ☐

10. $25 \div 4 =$ ☐

11. $58 \div 6 =$ ☐

12. $54 \div 8 =$ ☐

13. $61 \div 9 =$ ☐

14. $47 \div 5 =$ ☐

CHART FOR CONVERTING FRACTIONS TO DECIMALS

$\frac{1}{10} = 0.1$

$\frac{2}{10} = 0.2$

$\frac{3}{10} = 0.3$

$\frac{4}{10} = 0.4$

$\frac{5}{10} = 0.5$

$\frac{6}{10} = 0.6$

$\frac{7}{10} = 0.7$

$\frac{8}{10} = 0.8$

$\frac{9}{10} = 0.9$

$\frac{1}{4} = 0.25$

$\frac{2}{4} = 0.5$

$\frac{3}{4} = 0.75$

$\frac{1}{2} = 0.5$

$\frac{1}{5} = 0.2$

$\frac{2}{5} = 0.4$

$\frac{3}{5} = 0.6$

$\frac{4}{5} = 0.8$

Dividing by 10 – remainders as decimals

When dividing by ten it's easy to write any remainder as a decimal.

$43 \div 10 = 4$ remainder $3 = 4\frac{3}{10} = 4.3$

Fill in the boxes below.

1. 36 ÷ 10 = ☐ remainder ☐ = ☐ = ☐

2. 52 ÷ 10 = ☐ remainder ☐ = ☐ = ☐

3. 47 ÷ 10 = ☐ remainder ☐ = ☐ = ☐

4. 91 ÷ 10 = ☐ remainder ☐ = ☐ = ☐

5. 23 ÷ 10 = ☐ remainder ☐ = ☐ = ☐

6. 15 ÷ 10 = ☐ remainder ☐ = ☐ = ☐

7. 68 ÷ 10 = ☐ remainder ☐ = ☐ = ☐

8. 7 ÷ 10 = ☐ remainder ☐ = ☐ = ☐

Dividing by 10 – remainders as decimals

67 ÷ 10 = 6 remainder 7 = 6 $\frac{7}{10}$ 6.7

Fill in the boxes below.

1. 34 ÷ 10 = ☐ remainder ☐ = ☐/☐ = ☐.☐

2. 53 ÷ 10 = ☐ remainder ☐ = ☐/☐ = ☐.☐

3. 49 ÷ 10 = ☐ remainder ☐ = ☐/☐ = ☐.☐

4. 98 ÷ 10 = ☐ remainder ☐ = ☐/☐ = ☐.☐

5. 27 ÷ 10 = ☐ remainder ☐ = ☐/☐ = ☐.☐

6. 11 ÷ 10 = ☐ remainder ☐ = ☐/☐ = ☐.☐

7. 65 ÷ 10 = ☐ remainder ☐ = ☐/☐ = ☐.☐

8. 72 ÷ 10 = ☐ remainder ☐ = ☐/☐ = ☐.☐

9. 86 ÷ 10 = ☐ remainder ☐ = ☐/☐ = ☐

10. 8 ÷ 10 = ☐ remainder ☐ = ☐/☐ = ☐

Dividing by 5 – remainders as decimals

$36 \div 5 = 7$ remainder $1 = 7\frac{1}{5} = 7.2$

1. 46 ÷ 5 = ☐ remainder ☐ = ☐/☐ = ☐.☐

2. 38 ÷ 5 = ☐ remainder ☐ = ☐/☐ = ☐.☐

3. 54 ÷ 5 = ☐ remainder ☐ = ☐/☐ = ☐.☐

4. 28 ÷ 5 = ☐ remainder ☐ = ☐/☐ = ☐.☐

5. 63 ÷ 5 = ☐ remainder ☐ = ☐/☐ = ☐.☐

6. 79 ÷ 5 = ☐ remainder ☐ = ☐/☐ = ☐.☐

7. 17 ÷ 5 = ☐ remainder ☐ = ☐/☐ = ☐.☐

8. 81 ÷ 5 = ☐ remainder ☐ = ☐/☐ = ☐.☐

9. 93 ÷ 5 = ☐ remainder ☐ = ☐/☐ = ☐.☐

10. 3 ÷ 5 = ☐ remainder ☐ = ☐/☐ = ☐.☐

Dividing by 5 – remainders as decimals

$27 \div 5 = 5$ remainder $2 = 5\frac{2}{5} = 5.4$

1. 94 ÷ 5 = ☐ remainder ☐ = ☐/— = ☐•

2. 86 ÷ 5 = ☐ remainder ☐ = ☐/— = ☐•

3. 13 ÷ 5 = ☐ remainder ☐ = ☐/— = ☐•

4. 76 ÷ 5 = ☐ remainder ☐ = ☐/— = ☐•

5. 62 ÷ 5 = ☐ remainder ☐ = ☐/— = ☐•

6. 21 ÷ 5 = ☐ remainder ☐ = ☐/— = ☐•

7. 58 ÷ 5 = ☐ remainder ☐ = ☐/— = ☐•

8. 39 ÷ 5 = ☐ remainder ☐ = ☐/— = ☐•

9. 47 ÷ 5 = ☐ remainder ☐ = ☐/— = ☐•

10. 7 ÷ 5 = ☐ remainder ☐ = ☐/— = ☐•

Dividing – remainders as decimals

Complete these division sums, making the remainder a decimal.

1. $23 \div 4 =$ ☐

2. $35 \div 4 =$ ☐

3. $133 \div 10 =$ ☐

4. $254 \div 10 =$ ☐

5. $88 \div 5 =$ ☐

6. $67 \div 5 =$ ☐

7. $93 \div 4 =$ ☐

8. $89 \div 4 =$ ☐

9. $74 \div 5 =$ ☐

10. $83 \div 5 =$ ☐

11. $532 \div 10 =$ ☐

12. $315 \div 10 =$ ☐

Dividing – remainders as decimals

Complete these division sums, making the remainder a decimal.

1. $61 \div 4 =$ ☐
2. $74 \div 4 =$ ☐
3. $163 \div 10 =$ ☐
4. $204 \div 10 =$ ☐
5. $76 \div 5 =$ ☐
6. $63 \div 5 =$ ☐
7. $95 \div 4 =$ ☐
8. $83 \div 4 =$ ☐
9. $97 \div 5 =$ ☐
10. $68 \div 5 =$ ☐
11. $582 \div 10 =$ ☐
12. $445 \div 10 =$ ☐

Dividing money with a calculator

You need a calculator for this page. Sometimes you have to interpret the display when working with money because we always write money to two decimal places.

On the calculator 14 ÷ 4 = 3.5
If this is money we would write the answer as £3.50

On these questions write down what the calculator displays and then how we would write the answer as money.

1. £234 ÷ 10 = ☐ or £☐ **2.** £198 ÷ 10 = ☐ or £☐

3. £471 ÷ 10 = ☐ or £☐ **4.** £784 ÷ 10 = ☐ or £☐

5. £214 ÷ 5 = ☐ or £☐ **6.** £328 ÷ 5 = ☐ or £☐

7. £183 ÷ 6 = ☐ or £☐ **8.** £249 ÷ 6 = ☐ or £☐

9. £268 ÷ 8 = ☐ or £☐ **10.** £668 ÷ 8 = ☐ or £☐

Dividing money with a calculator

You need a calculator for this page. Sometimes you have to interpret the display when working with money because we always write money to two decimal places.

On the calculator 346 ÷ 10 = 34.6.
If this is money we would write the answer as £34.60

On these questions write down what the calculator displays and then how we would write the answer as money.

1. £489 ÷ 10 = ☐ or £☐ **2.** £963 ÷ 10 = ☐ or £☐

3. £211 ÷ 10 = ☐ or £☐ **4.** £567 ÷ 10 = ☐ or £☐

5. £316 ÷ 5 = ☐ or £☐ **6.** £439 ÷ 5 = ☐ or £☐

7. £189 ÷ 6 = ☐ or £☐ **8.** £255 ÷ 6 = ☐ or £☐

9. £276 ÷ 8 = ☐ or £☐ **10.** £676 ÷ 8 = ☐ or £☐

Interpreting calculator displays

Sometimes when you use a calculator to divide you get amazingly long answers.
26 ÷ 9 = 2.8888888
This is between 2 and 3

Write down the two whole numbers these calculator answers are between:

e.g. 93 ÷ 11 is	8.4545454	which is between	8	and	9
1. 96 ÷ 7 is		which is between		and	
2. 88 ÷ 9 is		which is between		and	
3. 246 ÷ 11 is		which is between		and	
4. 828 ÷ 11 is		which is between		and	
5. 507 ÷ 7 is		which is between		and	
6. 277 ÷ 11 is		which is between		and	
7. 777 ÷ 9 is		which is between		and	

Rounding up or rounding down

Decide whether these answers should be rounded up or rounded down. You will need to think about the question – but you can use a calculator to work them out.

1. Easter eggs are packed in boxes of 24.
How many boxes are needed to pack 250 eggs?

2. 355 children are going on a trip to Brighton.
A coach seats 53 children.
How many coaches are needed for the children?

3. I have 366 cans of coke.
They are packed in cases of 24.
How many whole cases have I got?

4. David has been saving for his family to go to Miami.
He has saved £3 500. Tickets cost £600 each.
How many tickets can he buy?

5. I have made 265 cakes for a party.
Boxes hold 25 cakes.
How many boxes do I need to hold all the cakes?

6. A ferry to the Isle of Wight holds 230 people.
How many trips would the ferry need to take
to carry 1 200 people to the island?

Rounding up or rounding down

Decide whether these answers should be rounded up or rounded down. You will need to think about the question – but you can use a calculator to work them out.

1. A necklace is made up of 36 beads.
How many necklaces can be made with 500 beads?

2. A car petrol tank holds 55 litres. How many times would you have to fill the tank to go 2 000 miles?

3. I have 270 bottles of lemonade.
They are packed in cases of 16.
How many whole cases have I got?

4. Sumit has been saving for tickets to the theatre.
She has saved £230. How many tickets can she buy if they cost £9.50 each?

5. I have cooked 188 sausages for a barbeque.
Trays hold 12 sausages.
How many trays do I need to hold all the sausages?

6. A cablecar to the top of the mountain holds 35 people.
How many trips would the cablecar need to take to carry 800 people to the top of the mountain?

7. I have 2 000 tins of beans.
How many boxes holding 30 tins can I fill?

Answers

Page 3

1. 4 r 2 or $4\frac{2}{5}$ **2.** 3 r 2 or $3\frac{2}{10}$ **3.** 5 r 2 or $5\frac{2}{5}$ **4.** 9 r 1 or $9\frac{1}{3}$
5. 6 r 2 or $6\frac{2}{4}$ **6.** 9 r 3 or $9\frac{3}{9}$

Page 4

1. 8 ½ **2.** $7\frac{2}{3}$ **3.** $7\frac{4}{5}$ **4.** $4\frac{5}{6}$ **5.** $4\frac{4}{10}$ **6.** $5\frac{8}{9}$ **7.** $7\frac{3}{4}$
8. $9\frac{5}{8}$ **9.** $2\frac{5}{7}$ **10.** $7\frac{1}{4}$ **11.** $6\frac{5}{6}$ **12.** $4\frac{7}{8}$ **13.** $3\frac{7}{9}$ **14.** $9\frac{3}{5}$

Page 5

1. 12 ½ **2.** $8\frac{2}{3}$ **3.** $6\frac{4}{5}$ **4.** $4\frac{1}{6}$ **5.** $5\frac{5}{10}$ **6.** $3\frac{6}{9}$ **7.** $4\frac{2}{4}$
8. $4\frac{5}{8}$ **9.** $7\frac{3}{7}$ **10.** $6\frac{1}{4}$ **11.** $9\frac{4}{6}$ **12.** $6\frac{6}{8}$ **13.** $6\frac{7}{9}$ **14.** $9\frac{2}{5}$

Page 7

1. 3 r 6 = $3\frac{6}{10}$ = 3.6 **2.** 5 r 2 = $5\frac{2}{10}$ = 5.2 **3.** 4 r 7 = $4\frac{7}{10}$ = 4.7 **4.** 9 r 1 = $9\frac{1}{10}$ = 9.1
5. 2 r 3 = $2\frac{3}{10}$ = 2.3 **6.** 1 r 5 = $1\frac{5}{10}$ = 1.5 **7.** 6 r 8 = $6\frac{8}{10}$ = 6.8 **8.** 0 r 7 = $\frac{7}{10}$ = 0.7

Page 8

1. 3 r 4 = $3\frac{4}{10}$ = 3.4 **2.** 5 r 3 = $5\frac{3}{10}$ = 5.3 **3.** 4 r 9 = $4\frac{9}{10}$ = 4.9 **4.** 9 r 8 = $9\frac{8}{10}$ = 9.8
5. 2 r 7 = $2\frac{7}{10}$ = 2.7 **6.** 1 r 1 = $1\frac{1}{10}$ = 1.1 **7.** 6 r 5 = $6\frac{5}{10}$ = 6.5 **8.** 7 r 2 = $7\frac{2}{10}$ = 7.2
9. 8 r 6 = $8\frac{6}{10}$ = 8.6 **10.** 0 r 8 = $\frac{8}{10}$ = 0.8

Page 9

1. 9 r 1 = $9\frac{1}{5}$ = 9.2 **2.** 7 r 3 = $7\frac{3}{5}$ = 7.6 **3.** 10 r 4 = $10\frac{4}{5}$ = 10.8 **4.** 5 r 3 = $5\frac{3}{5}$ = 5.6
5. 12 r 3 = $12\frac{3}{5}$ = 12.6 **6.** 15 r 4 = $15\frac{4}{5}$ = 15.8 **7.** 3 r 2 = $3\frac{2}{5}$ = 3.4
8. 16 r 1 = $16\frac{1}{5}$ = 16.2 **9.** 18 r 3 = $18\frac{3}{5}$ = 18.6 **10.** 0 r 3 = $\frac{3}{5}$ = 0.6

Page 10

1. 18 r 4 = $18\frac{4}{5}$ = 18.8 **2.** 17 r 1 = $17\frac{1}{5}$ = 17.2 **3.** 2 r 3 = $2\frac{3}{5}$ = 2.6
4. 15 r 1 = $15\frac{1}{5}$ = 15.2 **5.** 12 r 2 = $12\frac{2}{5}$ = 12.4 **6.** 4 r 1 = $4\frac{1}{5}$ = 4.2 **7.**11 r 3 = $11\frac{3}{5}$ = 11.6
8. 7 r 4 = $7\frac{4}{5}$ = 7.8 **9.** 9 r 2 = $9\frac{2}{5}$ = 9.4 **10**. 1 r 2 = $1\frac{2}{5}$ = 1.4

Page 11

1. 5.75 **2.** 8.75 **3.** 13.3 **4.** 25.4 **5.** 17.6 **6.** 13.4
7. 23.25 **8.** 22.25 **9.** 14.8 **10.** 16.6 **11.** 53.2 **12.** 31.5

Page 12

1. 15.25 **2.** 18.5 **3.** 16.3 **4.** 20.4 **5.** 15.2 **6.** 12.6
7. 23.75 **8.** 20.75 **9.** 19.4 **10.** 13.6 **11.** 58.2 **12.** 44.5

Page 13

1. 23.4 or £23.40 **2.** 19.8 or £19.80 **3.** 47.1 or £47.10 **4.** 78.4 or £78.40
5. 42.8 or £42.80 **6.** 65.6 or £65.60 **7.** 30.5 or £30.50 **8.** 41.5 or £41.50
9. 33.5 or £33.50 **10.** 83.5 or £83.50

Answers cont.

Page 14

1. 48.9 or £48.90 **2.** 96.3 or £96.30 **3.** 21.1 or £21.10 **4.** 56.7 or £56.70
5. 63.2 or £63.20 **6.** 87.8 or £87.80 **7.** 31.5 or £31.50 **8.** 42.5 or £42.50
9. 34.5 or £34.50 **10.** 84.5 or £84.50

Page 15

1. 13.714285 13 and 14 **2.** 9.7777777 9 and 10 **3.** 22.363636 22 and 23
4. 75.272727 75 and 76 **5.** 72.428571 72 and 73 **6.** 25.181818 25 and 26
7. 86.333333 86 and 87

Page 16

1. 11 **2.** 7 **3.** 15 **4.** 5 **5.** 11 **6.** 6

Page 17

1. 13 **2.** 37 **3.** 16 **4.** 24 **5.** 16 **6.** 23 **7.** 66