Fractions, Decimals and Percentages

Book One

By Kin Learning

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Fourth Edition

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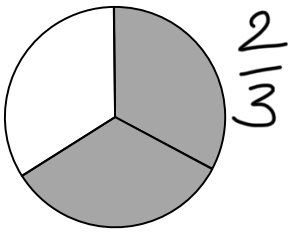
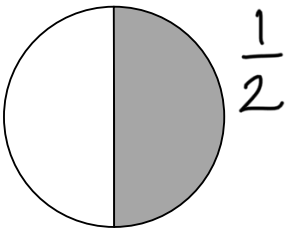
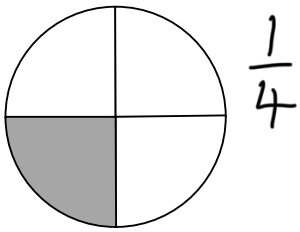
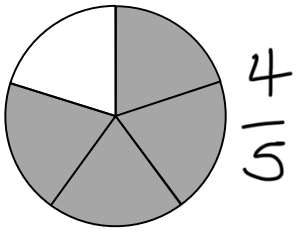
Recognising Fractions 1

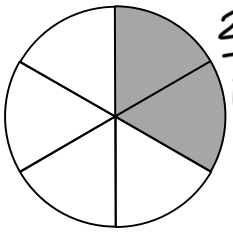
Write the fraction that has been coloured in each circle.

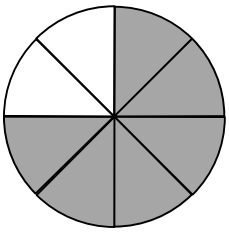

$\frac{2}{3}$

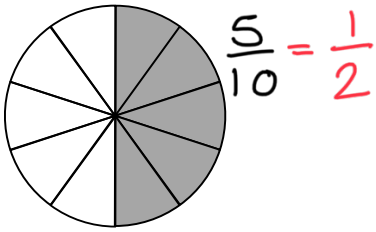

$\frac{1}{2}$

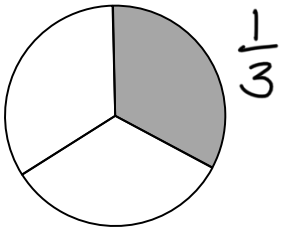

$\frac{1}{4}$

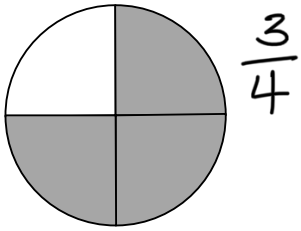

$\frac{4}{5}$

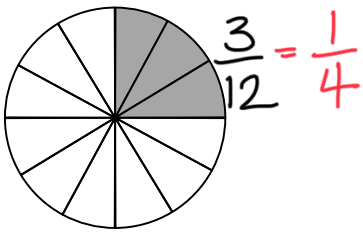

$\frac{2}{6} = \frac{1}{3}$

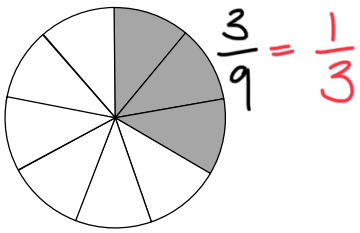

$\frac{6}{8} = \frac{3}{4}$

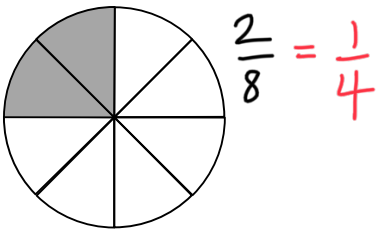

$\frac{5}{10} = \frac{1}{2}$

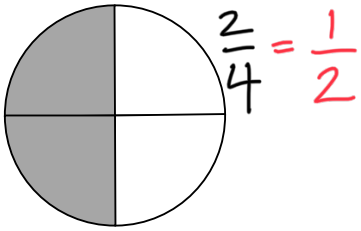

$\frac{1}{3}$

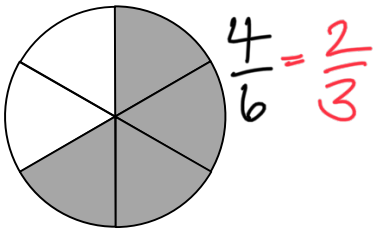

$\frac{3}{4}$

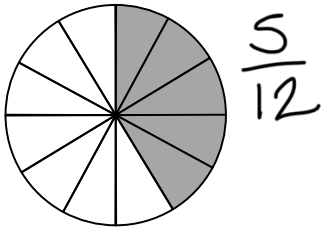

$\frac{3}{12} = \frac{1}{4}$


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


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


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


$\frac{4}{6} = \frac{2}{3}$


$\frac{5}{12}$

Equivalent Fractions 1

Complete the following equivalent fractions.

1. $\frac{1}{4} = \frac{3}{12}$
2. $\frac{2}{3} = \frac{4}{6}$
3. $\frac{3}{5} = \frac{6}{10}$
4. $\frac{7}{10} = \frac{70}{100}$
5. $\frac{4}{5} = \frac{20}{25}$
6. $\frac{9}{10} = \frac{45}{50}$
7. $\frac{3}{4} = \frac{75}{100}$
8. $\frac{5}{8} = \frac{25}{40}$
9. $\frac{1}{4} = \frac{20}{80}$
10. $\frac{1}{4} = \frac{2}{8}$

Use equivalent fractions to solve the following:

1. $\frac{80}{100} = \frac{4}{5}$
2. $\frac{9}{12} = \frac{3}{4}$
3. $\frac{12}{15} = \frac{4}{5}$
4. $\frac{1}{10} = \frac{10}{100}$
5. $\frac{4}{7} = \frac{16}{28}$
6. $\frac{70}{80} = \frac{7}{80}$
7. $\frac{5}{9} = \frac{10}{18}$
8. $\frac{1}{5} = \frac{20}{100}$
9. $\frac{40}{100} = \frac{2}{5}$
10. $\frac{3}{9} = \frac{1}{3}$

Equivalent Fractions 2

Complete these fractions to make them all equal to one half.

1. $\frac{3}{6}$
2. $\frac{8}{16}$
3. $\frac{20}{40}$
4. $\frac{15}{30}$
5. $\frac{25}{50}$
6. $\frac{50}{100}$

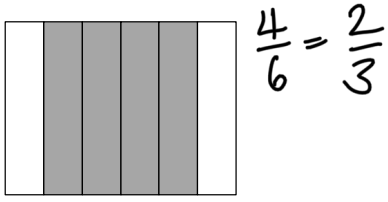
Equivalent Fractions 3

Complete these fractions to make them all equal to one quarter. Remember: when a fraction is equal to one quarter, the denominator is always 4 times the numerator.

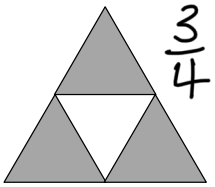
1. $\frac{4}{16}$
2. $\frac{6}{24}$
3. $\frac{10}{40}$
4. $\frac{6}{24}$
5. $\frac{25}{100}$
6. $\frac{250}{1000}$

Recognising Fractions 2

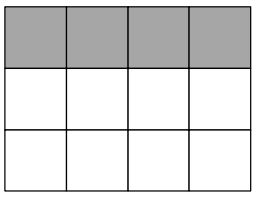
Write the fraction that has been shaded in each shape.



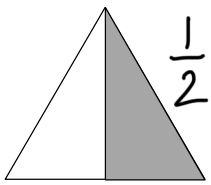
$\frac{4}{6} = \frac{2}{3}$



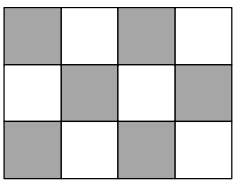
$\frac{3}{4}$



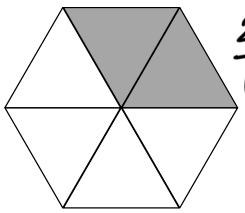
$\frac{4}{12} = \frac{1}{3}$



$\frac{1}{2}$



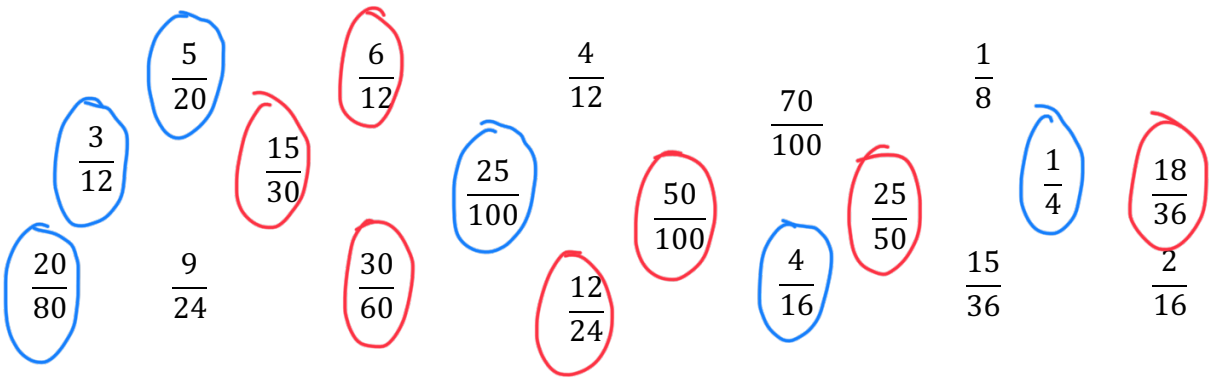
$\frac{6}{12} = \frac{1}{2}$



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

Equivalent Fractions 4

1. How many eighths are in three quarters? 6
2. How many tenths are in one half? 5
3. How many thirds are in four sixths? 2
4. How many tenths are equal to four fifths? 8
5. What is three-quarters written in hundredths? $\frac{75}{100}$
6. Look at the fractions below. Put a red circle around the fractions that are equivalent to one half. Put a blue circle around the fractions that are equivalent to one quarter.
   Be careful: some fractions are not equal to one half or one quarter.



Cancelling Fractions

Cancel the following fractions so that they are written in their simplest forms.

1. $\frac{25}{30} = \frac{5}{6}$
2. $\frac{75}{100} = \frac{3}{4}$
3. $\frac{24}{28} = \frac{6}{7}$
4. $\frac{200}{500} = \frac{2}{5}$
5. $\frac{500}{1000} = \frac{1}{2}$
6. $\frac{48}{60} = \frac{4}{5}$
7. $\frac{100}{2000} = \frac{1}{20}$
8. $\frac{45}{50} = \frac{9}{10}$
9. $\frac{32}{40} = \frac{4}{5}$
10. $\frac{15}{20} = \frac{3}{4}$

Cancelling Fractions 2

Cancel the following fractions so that they are written in their simplest forms.

1. $\frac{12}{15} = \frac{4}{5}$
2. $\frac{25}{100} = \frac{1}{4}$
3. $\frac{30}{60} = \frac{1}{2}$
4. $\frac{45}{60} = \frac{3}{4}$
5. $\frac{72}{80} = \frac{9}{10}$
6. $\frac{24}{30} = \frac{4}{5}$
7. $\frac{16}{20} = \frac{4}{5}$
8. $\frac{5}{20} = \frac{1}{4}$
9. $\frac{50}{100} = \frac{1}{2}$
10. $\frac{35}{50} = \frac{7}{10}$

Ordering Fractions 1

Put these fractions in ascending order.

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

1/8 _____ 1/5 _____ 1/4 _____ 1/3 _____ 1/2 _____

2. $\frac{3}{10}, \frac{3}{3}, \frac{3}{4}, \frac{3}{12}, \frac{3}{5}$

3/12 _____ 3/10 _____ 3/5 _____ 3/4 _____ 3/3 _____

3. $\frac{2}{12}, \frac{5}{12}, \frac{1}{2}, \frac{11}{12}, \frac{8}{12}$

2/12 _____ 5/12 _____ 1/2 _____ 8/12 _____ 11/12 _____

4. $\frac{2}{3}, \frac{1}{2}, \frac{1}{3}, \frac{1}{5}, \frac{1}{15}$

1/15 _____ 1/5 _____ 1/3 _____ 1/2 _____ 2/3 _____

5. $\frac{9}{10}, \frac{3}{5}, \frac{1}{10}, \frac{7}{10}, 1$

1/10 _____ 3/5 _____ 7/10 _____ 9/10 _____ 1 _____

Ordering Fractions 2

Put these fractions in ascending order. You may need to use equivalent fractions to help you.

1. $\frac{1}{4}, \frac{1}{8}, \frac{1}{2}, \frac{6}{8}$

1/8 _____ 1/4 _____ 1/2 _____ 6/8 _____

2. $\frac{1}{3}, \frac{2}{3}, \frac{1}{2}, \frac{5}{6}$

1/3 _____ 1/2 _____ 2/3 _____ 5/6 _____

3. $\frac{1}{10}, \frac{1}{5}, \frac{9}{10}, \frac{4}{5}$

1/10 _____ 1/5 _____ 4/5 _____ 9/10 _____

4. $\frac{7}{8}, \frac{10}{10}, \frac{1}{3}, \frac{1}{2}$

1/3 _____ 1/2 _____ 7/8 _____ 10/10 _____

5. $\frac{1}{10}, \frac{1}{2}, \frac{3}{4}, \frac{1}{5}$

1/10 _____ 1/5 _____ 1/2 _____ 3/4 _____

Ordering Fractions 3

Put these fractions in ascending order. You may need to use equivalent fractions to help you.

1. $\frac{3}{4}$, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{7}{8}$

1/8 1/4 3/8 3/4 7/8

2. $\frac{3}{5}$, $\frac{3}{100}$, $\frac{3}{20}$, $\frac{3}{8}$, $\frac{3}{15}$

3/100 3/20 3/15 3/8 3/5

3. $\frac{7}{12}$, $\frac{1}{2}$, $\frac{2}{12}$, $\frac{1}{12}$, $\frac{9}{12}$

1/12 2/12 1/2 7/12 9/12

4. $\frac{1}{7}$, $\frac{1}{10}$, $\frac{1}{6}$, $\frac{1}{30}$, $\frac{1}{12}$

1/30 1/12 1/10 1/7 1/6

5. $\frac{1}{10}$, $\frac{3}{5}$, $\frac{3}{10}$, $\frac{1}{5}$, $\frac{4}{10}$

1/10 1/5 3/10 4/10 3/5

Finding a Fraction of a Number

Section 1

Find the following fractions.

1. $^1/_7$ of 70 = 10
2. $^1/_3$ of 33 = 11
3. $^1/_2$ of 50 = 25
4. $^1/_4$ of 20 = 5
5. $^1/_{10}$ of 120 = 12
6. $^1/_5$ of 100 = 20
7. $^1/_5$ of 60 = 12
8. $^1/_2$ of 48 = 24
9. $^1/_8$ of 88 = 11
10. $^1/_6$ of 30 = 5

Section 2

1. $^3/_5$ of 60 = 36
2. $^2/_3$ of 600 = 400
3. $^3/_{10}$ of 150 = 45
4. $^5/_6$ of 30 = 25
5. $^5/_8$ of 80 = 50
6. $^9/_{11}$ of 99 = 81
7. $^1/_{12}$ of 24 = 2
8. $^1/_4$ of 100 = 25

Section 3

1. $^4/_{10}$ of 50 = 20
2. $^1/_4$ of 60 = 15
3. $^1/_2$ of 90 = 45
4. $^3/_3$ of 3,000 = 3,000
5. $^1/_2$ of 100 = 50
6. $^7/_8$ of 8,000 = 7,000
7. $^5/_6$ of 3,000 = 2,500
8. $^3/_4$ of 100 = 75

Adding Fractions with the Same Denominator

Complete the following addition and subtraction questions.

Section 1

1. $\frac{1}{5} + \frac{3}{5} = \frac{4}{5}$
2. $\frac{3}{4} + \frac{1}{4} = \frac{4}{4} = 1$
3. $\frac{1}{10} + \frac{6}{10} = \frac{7}{10}$
4. $\frac{2}{5} + \frac{2}{5} = \frac{4}{5}$
5. $\frac{3}{20} + \frac{12}{20} = \frac{15}{20} = \frac{3}{4}$
6. $\frac{4}{12} + \frac{2}{12} + \frac{6}{12} = \frac{12}{12} = 1$
7. $\frac{5}{8} - \frac{1}{8} = = \frac{4}{8} = \frac{1}{2}$
8. $\frac{4}{5} - \frac{1}{5} = \frac{3}{5}$
9. $\frac{80}{100} - \frac{15}{100} = \frac{65}{100} = \frac{13}{20}$
10. $\frac{4}{9} - \frac{2}{9} = \frac{2}{9}$

Section 2

Complete the questions and fill in the blanks.

1. $\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$
2. $1 - \frac{1}{8} = \frac{7}{8}$
3. $\frac{5}{8} - \frac{1}{8} - \frac{1}{8} = \frac{3}{8}$
4. $\frac{3}{20} + \frac{17}{20} = 1$
5. $\frac{5}{9} + \frac{1}{9} + \frac{3}{9} = 1$
6. $\frac{12}{20} + \frac{8}{20} = \frac{20}{20} = 1$
7. $1 - \frac{3}{4} = \frac{1}{4}$
8. $\frac{1}{2} + \frac{1}{4} = \frac{3}{4}$
9. $\frac{1}{3} - \frac{1}{3} = 0$
10. $\frac{25}{30} - \frac{10}{30} = \frac{15}{30} = \frac{1}{2}$

Section 3

Review your answers to the sections above to see if any of your answers can be simplified.

See above.

Guess The Fraction

1. My numerator is 1. I am bigger than one quarter. Which fraction could I be? 1/3 or 1/2
2. My denominator is double my top number. Which fraction could I be? Any fraction equivalent to one half.
3. I am smaller than one-fifth. My bottom number is an even number. Which fraction could I be? E.g. 1/6, 1/8, 1/10, etc.
4. I am smaller than two-tenths. My denominator is 12. Which fraction could I be? 2/12 or 1/12
5. My numerator is 3. I am larger than one half. Which fraction could I be? 3/5 or 3/4
6. My bottom number is 8. I am equal to one quarter. Which fraction am I? 2/8
7. My denominator is 10. I am less than one half. Which fraction could I be? 4/10, 3/10, 2/10 or 1/10
8. I am what is left when you subtract three-fifths from one whole. Which fraction am I? 2/5
9. I am equal to one whole. My bottom number is 4. Which fraction am I? 4/4
10. My numerator is one quarter of my denominator. My bottom number is 20. Which fraction am I? 5/20
11. I am equal to one half. My numerator is 10. Which fraction am I? 10/20
12. I am equal to one-third, my denominator is 12. What fraction am I? 4/12
13. If you add me to $\frac{1}{6}$, we will make one whole. What fraction am I? 5/6

Find:

11. 1/4 of 100 25
12. 1/2 of 100 50
13. 3/4 of 100 75

Finding Fractions, Adding to 1 and Equivalent Fractions 1

1. Fill in the gaps:

   a. $\frac{4}{6} + \frac{2}{6} = 1$

   b. $\frac{7}{8} + \frac{1}{8} = 1$

   c. $\frac{7}{9} + \frac{2}{9} = 1$

   d. $\frac{3}{10} + \frac{7}{10} = 1$

   e. $\frac{3}{4} + \frac{1}{4} = 1$

2. How many sixths are needed to make one whole? 6

3. What must be added to $^2/_3$ to make one whole? $^1/_3$

4. How many tenths are needed to make two wholes? 20

5. What is left when you subtract two-fifths from one whole? $^3/_5$

6. Jackie is eating an apple pie. She eats $\frac{3}{8}$ of the pie. What fraction of the pie is left? $^5/_8$

7. Randy is feeding his chickens. So far, he has fed 12 out of 15 chickens. What fraction of Randy's chickens have been fed? Write your answer as a fraction in its simplest form. $^4/_5$

8. Mike and Janet are playing a card game. Mike has $\frac{2}{6}$ of the cards and Janet has $\frac{3}{6}$ of the cards. What fraction of the cards is left? $^1/_6$

9. There are 30 children in LaToya's class. 18 of those children are girls. What fraction of LaToya's class are girls? Write your answer as a fraction in its simplest form. $^3/_5$

10. There are 300 children in a school. $^{2}/_{5}$ of the children are girls. How many girls are there? 120

11. There are 150 people on an aeroplane. $^{9}/_{10}$ of the people on the flight are adults.

    a. What fraction of the fliers are children? $^{1}/_{10}$

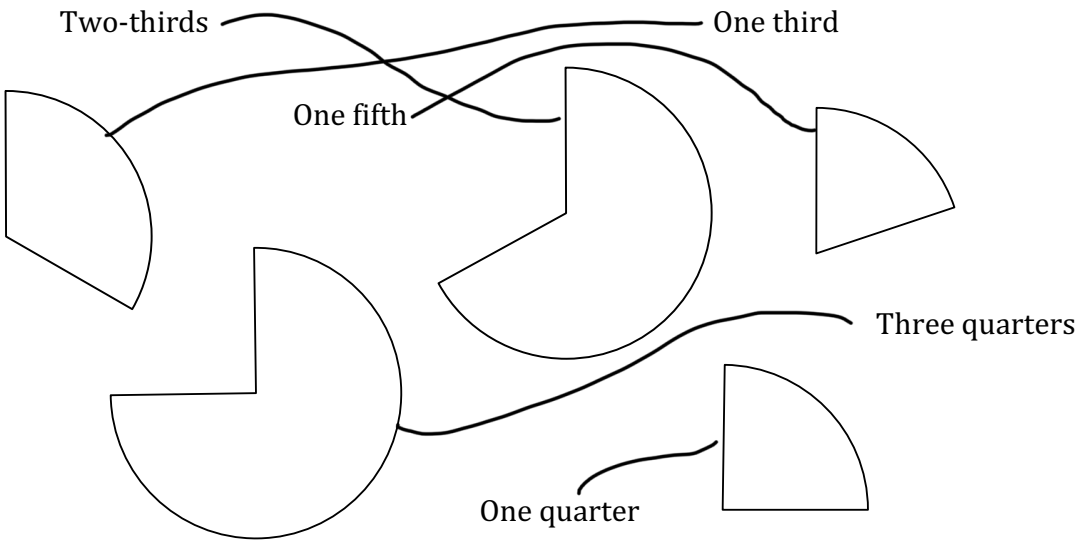
    b. How many children are there on the flight? 135

12. Tito and Jermaine are eating a box of sweets. Tito eats $\frac{1}{8}$ of the box and Jermaine eats $\frac{3}{8}$ of the box. They leave the rest for their parents.

    a. What fraction of the box do they leave for their parents? $\frac{4}{8} = \frac{1}{2}$

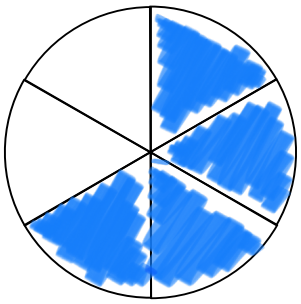
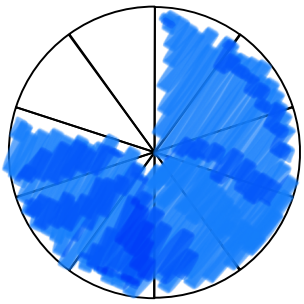
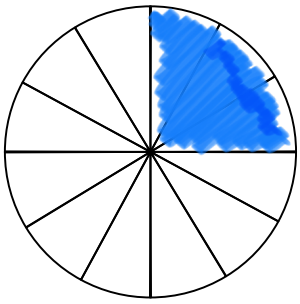
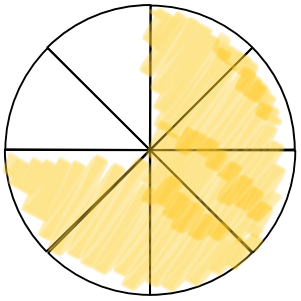
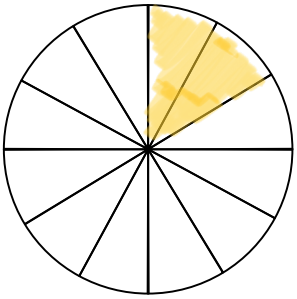
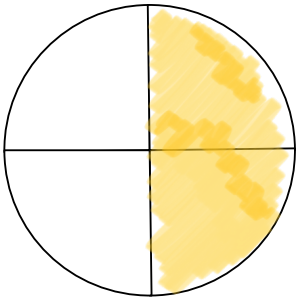
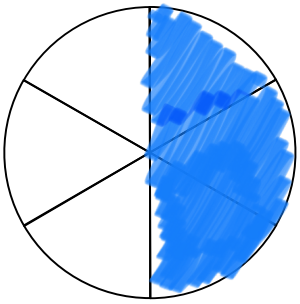
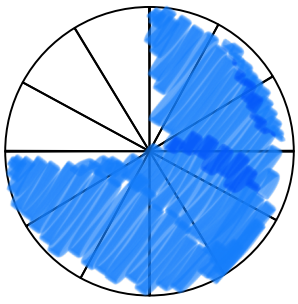
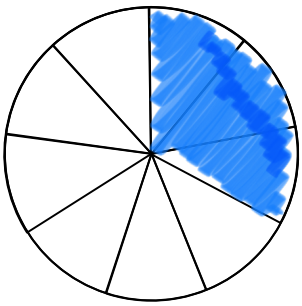
    b. If Tito and Jermaine's parents split the remaining sweets equally, what fraction will they each eat? $\frac{2}{8} = \frac{1}{4}$

13. Connect the fractions below with the correct names.



Equivalent Fractions 4

Colour in the fractions listed.

Two-thirds $\frac{2}{3} = \frac{4}{6}$ 	Four-fifths $\frac{4}{5} = \frac{8}{10}$ 	One quarter $\frac{1}{4} = \frac{3}{12}$ 
Three quarters $\frac{3}{4} = \frac{6}{8}$ 	One sixth $\frac{1}{6} = \frac{2}{12}$ 	One half $\frac{1}{2} = \frac{2}{4}$ 
One half 	Three quarters 	One third 

Ordering Decimals 1

Fill in the gaps below with either a greater than or less than sign.

1. 8.2 > 2.8
2. 0.1001 < 0.11
3. 19 > 1.9
4. 15.2 < 15.22
5. 0.008 < 0.08
6. 0.6 > 0.06
7. 2.02 < 2.2
8. 100.5 > 100.1
9. 13.13 < 13.31
10. 9.94 < 9.99

Ordering Decimals 2

Rewrite the following decimals in *descending* order.

1. 90, 90.1, 89.9, 99.99, 101

   101 99.99 90.1 90 89.9

2. 500, 500.55, 50.5, 55.5, 555

   555 500.55 500 55.5 50.5

3. 10.9, 10.01, 1.001, 10.009, 10.101

   10.9 10.101 10.01 10.009 1.001

4. 5.4, 54, 55, 45.4, 55.5

   55.5 55 54 45.4 5.4

5. 0.8, 0.008, 8.8, 8.008, 8

   8.8 8.008 8 0.8 0.008

Ordering Decimals 3

Rewrite the following decimals in *ascending* order.

1. 3.2, 3.0, 3.03, 3.33, 0.32

0.32 3.0 3.03 3.2 3.33

2. 9.993, 9.9, 9.393, 9.909, 9.1

9.1 9.393 9.9 9.909 9.993

3. 0.005, 0.5, 0.551, 0.515, 0.0505

0.005 0.0505 0.5 0.515 0.551

4. 7.14, 7.114, 7.4, 7.014, 7.414

7.014 7.114 7.14 7.4 7.414

5. 600, 606.6, 66.6, 6.96, 66.66

6.96 66.6 66.66 600 606.6

Place Value

Write the value of the 4 in the following numbers.

1. 30.04 4 hundredths
2. 400.25 4 hundred
3. 1004.9 4 units
4. 70.234 4 thousandths
5. 4.078 4 units
6. 45.79 4 tens
7. 807.4 4 tenths
8. 312.64 4 hundredths
9. 119.304 4 thousandths
10. 40,001.063 4 ten thousands

Finding Fractions Problems

1. Paula has eight puppies. One quarter of the puppies are black. How many of Paula's dogs are black? 2

2. Ursula has made 48 cupcakes. One quarter of the cupcakes are vanilla, the rest are chocolate. How many chocolate cupcakes has Ursula made? 36

3. Charlie's dad is 195cm tall. Charlie is $\frac{4}{5}$ as tall as his dad. How tall is Charlie? 156 cm

4. Adult train tickets from Yorkshire to London cost £48. Child tickets cost one-third of the adult tickets.

   a. How much do children's tickets cost? £16

   b. How much will it cost for 2 adults and 3 children to travel from Yorkshire to London? £144

5. Cinema tickets usually cost £12. Today, the cinema has reduced its ticket prices by one-quarter. How much are cinema tickets now? £9

6. 8 out of 10 children in a school have a sibling. There are 210 children in the school. How many children have siblings? 168

7. Tony is saving for a computer game. The game costs £45. Tony has only saved $^{7}/_{9}$ of the total cost. How much money does he have currently? £35

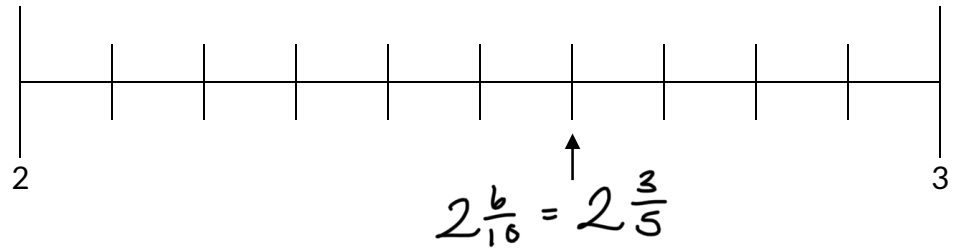
8. Jesam's football team is aiming to score 40 goals this season. They have already achieved $^{5}/_{8}$ of their aim. How many goals have they scored so far this season? 25

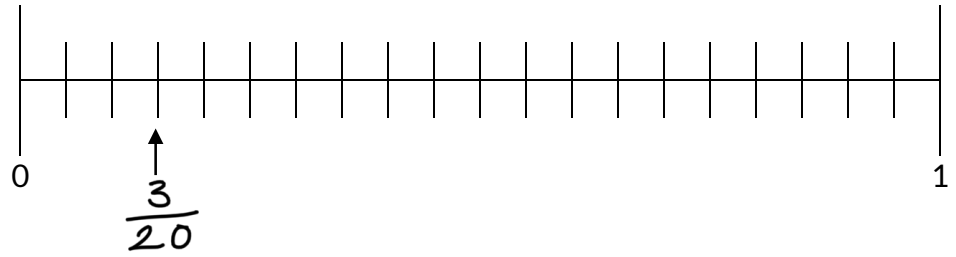
9. Leo has a jug filled with 1000ml of orange juice. He pours out $^{1}/_{8}$ of the juice. How much does he have left? 875ml

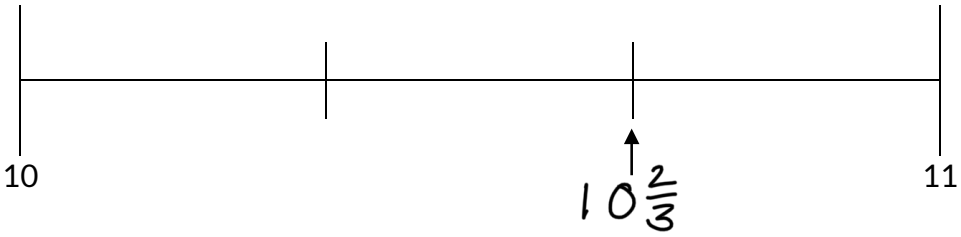
10. Would you prefer to have $\frac{1}{4}$ of £24 or $\frac{1}{3}$ of £21? $\frac{1}{3}$ of £21

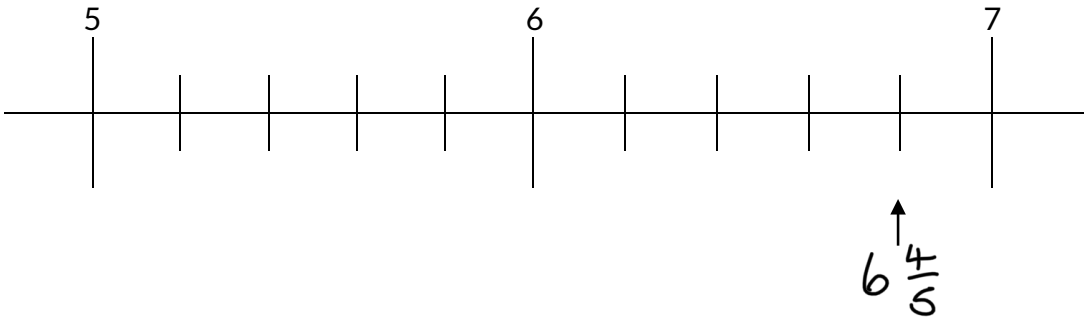
Number Lines

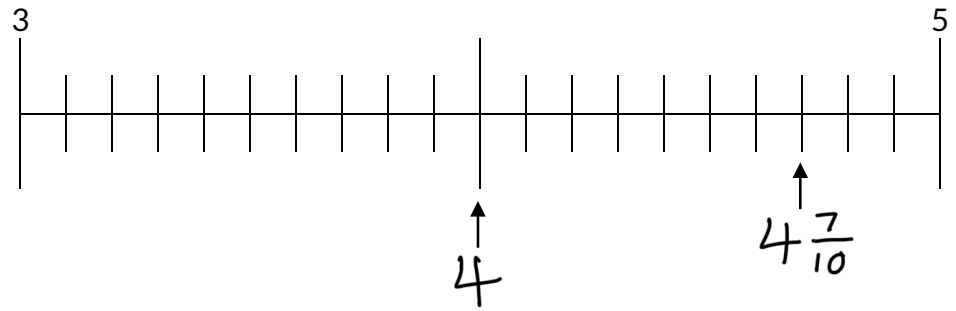
Fill in the number indicated by each arrow below. Write your answer as a fraction.











Money

Complete the following calculations.

Section 1

1. £27.13 + 263p = £29.76
2. £0.09 + £6126.74 + £71 = £6,197.83
3. £528.76 + 195p = £530.71
4. £1595 + £2.29 + £0.18 = £1,597.47
5. £0.18 + £7190.30 + £13 = £7,203.48

Section 2

1. £986.73 - 80p = £985.93
2. £3020 - £281.50 - 8p = £2,738.42
3. £2003 - £7.82 = £1,995.18
4. £676.51 - £28 = £648.51
5. £52 - 131p = £50.69

Section 3

1. £747.56 + £0.64 + £2.13 = £750.33
2. £0.85 + £4701.15 + £63 = £4,765
3. £321.81 + 50p + £41 = £363.31
4. £1643 + £314.31 + £9.18 = £1,966.49
5. £11.27 + 270p + £27 = £40.97

Money Cont.

Complete the following calculations.

Section 4

1. £779.90 - 157p = £778.33
2. £236.91 - £21 = £215.91
3. £558.17 - £4 = £554.17
4. £27 - 164p - £2 = £23.36
5. £826.42 - 198p = £824.44

Section 5

6. £95.10 + 288p + £31 = £128.98
7. £405 + £0.69 + 6p = £405.75
8. 50p + £943.35 + £11.34 = £955.19
9. £999.31 + £0.94 + 87p = £1,001.12
10. £325.04 + 461p + £43 = £372.65

Section 6

1. £46 - 294p = £43.06
2. 7p + £6045.91 + £3.50 = £6049.48
3. £1389 + £0.85 = £1,389.85
4. £304 + £5.00 = £309.00
5. £939.79 - £638.56 = £301.23

Money Problems

1. Helen has £20 and finds 5p on the street. How much money does she have now? £20.05
2. Emma has £200. She buys a bike for £139.99. How much does she have left? £60.01
3. Greg and Lisa each buy a computer game. Greg pays with a £20 note and gets £3.65 change. Lisa's game costs £15. What is the difference in the price of their games? £1.35
4. Heather would like to buy one book for £3.55, another book that costs £5.99 and a third book that costs £4.80. Today, the bookshop is offering 3 books for only £9.99. How much will Heather save with today's offer compared to the full price of all the books? £4.35

Use the table to answer the questions below.

Starters		Mains		Desserts	
Dough Balls	£3.20	Spaghetti Bolognese	£12	Apple Pie	£3.49
Salad	£5.99	Pizza	£11.99	Ice Cream (Two Scoops)	£2.49
Soup	£6	Lasagne	£9.99	Ice Cream (Three Scoops)	£3

5. If Dale buys a starter, a main and a dessert, what is the least he could spend? £15.68
6. How much will Dale spend if he buys dough balls, spaghetti bolognese and three scoops of ice cream? £18.20
7. If Dale has £20, how much change does he get from buying soup and a pizza? £2.01
8. Dale's friend Gail buys a spaghetti bolognese and an apple pie. As a tip she leaves a £2 coin, a £1 coin and a 5p coin. How much does Gail spend in total? £18.54

Finding Fractions, Adding to 1 and Equivalent Fractions 2

1. A marathon is 26 miles. Harold is running a half marathon this weekend. How far will Harold run? 13

2. Identical birthday cakes are bought for twins Alex and Kennedy. Alex eats $^4/_5$ of his cake and Kennedy eats $^7/_{10}$ of his. Which twin has eaten more of their cake? Alex

3. Eddie has won £10,000 from the lottery. He spends $^2/_{10}$ of his money on a car and $^4/_{10}$ of his money on a holiday for his entire family.

   a. What fraction of his money does Eddie have left? $\frac{4}{10} = \frac{2}{5}$

   b. How much money does Eddie have left? £4,000

4. Michael's grandmother has promised to give him one-fifth of £1000 for every birthday he has. How many years will it take for Michael to be given £1000? 5 years

5. Highland Primary School are putting on a production of The Lion, The Witch and the Wardrobe. $\frac{1}{11}$ of the children get speaking parts, $\frac{3}{11}$ of the children play animals, $\frac{1}{11}$ of children play woodland trees and the rest of the children work backstage.

   a. What fraction of the children work backstage? $\frac{6}{11}$

   b. If there are 88 children, how many children play animals? 24

6. Ann needs an entire bag of icing sugar for her recipe. She has $^3/_7$ of a bag currently. What fraction of a bag does she still need? $^4/_7$

7. Reva is trying to save enough money to buy a car. A car costs £15,000. Reva has saved $^5/_6$ of this amount. How much money does she still need? £2,500

Multiplication and Division by Powers of 10 – Whole Numbers

Divide the following by 10.

1. 1,416,740 141,674
2. 452,460 45,246
3. 40 4
4. 423,900 42,390
5. 330 33
6. 110,000 11,000

Multiply the following by 10.

1. 82 820
2. 911 9,110
3. 3,124 31,240
4. 50,130 501,300
5. 534,880 5,348,800
6. 6 60

Divide the following by 100.

1. 214,100 2,141
2. 4,600 46
3. 700 7
4. 76,500 765
5. 272,300 2,723
6. 300,000 3,000

Multiply the following by 100.

1. 1 100
2. 98 9,800
3. 345 34,500
4. 7,200 720,000
5. 15,879 1,587,900
6. 10 1,000

Divide the following numbers by 1000.

1. 1,197,000 1,197
2. 577,000 577
3. 157,000 157
4. 987,000 987
5. 225,000 225
6. 1,156,000 1,156

Multiplication and Division by Powers of 10 – Decimal Numbers

Multiply the following numbers by 10.

1. 20.8 208
2. 130 1,300
3. 981.697 9,816.97
4. 567.2 5,672
5. 214 2,140
6. 8 80
7. 8.01 80.1
8. 0.26 2.6
9. 0.7 7
10. 941.1 9,411

Divide the following numbers by 10.

1. 16.81 1.681
2. 1 0.1
3. 659.14 65.914
4. 327 32.7
5. 1.4 0.14
6. 0.94 0.094
7. 0.75 0.075
8. 271.8 27.18
9. 0.47 0.047
10. 344 34.4

Divide the following numbers by 100.

1. 673 6.73
2. 3 0.03
3. 68.7 0.687
4. 648.25 6.4825
5. 0.483 0.00483
6. 0.2 0.002
7. 32 0.32
8. 321.798 3.21798
9. 1.04 0.0104
10. 45.7 0.457
11. 5.71 0.0571
12. 0.04 0.0004

Multiply the following numbers by 100.

1. 602 60,200
2. 18.45 1,845
3. 421.777 42,177.7
4. 0.5 50
5. 13.35 1,335
6. 670 67,000
7. 47.3 4,730
8. 0.332 33.2
9. 1.2 120
10. 697.63 69,763
11. 958.3 95,830
12. 0.01 1

Divide the following numbers by 1000.

1. 14.78 0.01478
2. 808 0.808
3. 7.668 0.007668
4. 4,000 4
5. 627 0.627
6. 59.2 0.0592
7. 3103 3.103
8. 7 0.007
9. 0.46 0.00046
10. 927.3 0.9273
11. 0.69 0.00069
12. 200 0.2

Multiply the following numbers by 1000.

1. 20.82 20,820
2. 23 23,000
3. 712.95 712,950
4. 765.6 765,600
5. 160 160,000
6. 22.9 22,900
7. 2.34 2,340
8. 0.9 900
9. 0.43 430
10. 870.3 870,300
11. 4 4,000
12. 183.0 183,000

Division and Multiplication by Powers of 10 - Review

Complete the following questions.

Section 1

1. 8.97 × 100 = 897
2. 10 ÷ 1000 = 0.01
3. 870.03 × 1000 = 870,030
4. 37.53 ÷ 10 = 3.753
5. 680 × 1000 = 680,000
6. 677.3 ÷ 1000 = 0.6773
7. 13.55 × 100 = 1,355
8. 0.76 ÷ 10 = 0.076
9. 0.84 × 100 = 84
10. 481.3 × 100 = 48,130

Section 2

1. 0.89 × 100 = 89
2. 64 ÷ 1000 = 0.064
3. 54 ÷ 10 = 5.4
4. 279 ÷ 10 = 27.9
5. 927.5 × 10 = 9,275
6. 976.661 ÷ 1000 = 0.976661
7. 0.843 × 10 = 8.43
8. 0.9 × 10 = 9
9. 814 × 100 = 81,400
10. 774.601 × 10 = 7746.01

Section 3

1. 0.42 × 10 = 4.2
2. 399.3 ÷ 1000 = 0.3993
3. 196 ÷ 100 = 1.96
4. 694.94 ÷ 100 = 6.9494
5. 163 ÷ 10 = 16.3
6. 0.685 ÷ 1000 = 0.000685
7. 86.6 × 10 = 866
8. 147 × 100 = 14700
9. 182.5 × 100 = 182,500
10. 0.562 × 1000 = 562

Dividing by 10, 100 and 1000 questions

1. Victor has a 320ml bottle of cough syrup. Victor has had one-tenth of the bottle.

   a. How much cough syrup has he already had? 32ml

   b. How much does Victor have left? 288ml

2. Grandpa Ralph has decided to split £555 between his ten grandchildren this Christmas. How much will each child get? £55.50

3. Nancy is preparing to run a marathon. A marathon is 26.2 miles long. If Nancy runs one-tenth of that distance each day, how many miles does she run each day? 2.62 miles

4. What is 47 divided by 1000? 0.047

5. Kayla has built a Lego tower of 100 bricks. The tower is 40cm tall. What is the height of each brick? 0.4cm or 4mm

6. Hannah has decided to save £3.20 a week so that she can get a Barbie doll. The Barbie doll costs £32.

   a. For how many weeks will Hannah have to save in order to buy a doll? 10 weeks

   b. If Hannah saves up for 100 weeks, how much money will she have? £320

   c. How many Barbies will she be able to buy after 100 weeks? 10

7. Match the statements on the left to the statements on the right that give the same answer.

One-quarter of 100 25	Half of 100 50
Triple 25 75	25 x 4 100
Double 25 50	One quarter of 1000 250
One-tenth of 1000 100	Half of 50 25
25 x 10 250	Three-quarters of 100 75

Finding Fractions, Adding to 1 and Equivalent Fractions 3

1. Hayley has eaten one eighth of a box of chocolates. She has eaten 4 chocolates. How many chocolates were originally in the box? 32

2. Patrick spends £75 on a phone. This is one quarter of the money in his bank account.

   a. How much money did Patrick have in his bank account before he bought the phone? £300

   b. How much money did Patrick have after he bought the phone? £225

3. Diana has completed a survey and found that, out of the 40 children in her class, 30 children do not have pets.

   a. What fraction of children have pets? Write your answer in its simplest form. 1/4

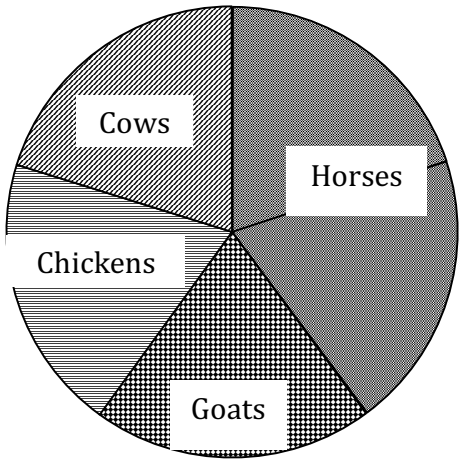
   b. What fraction of children do not have pets? 3/4

4. Two thirds of the children in Year 9 at Highland School are boys. There are 40 girls in Year 9. How many boys are there? 1/3 = 40 → 2/3 = 80

5. Donal has made a pie chart representing all of the animals at his farm. Donal has 40 horses. How many chickens does he have? 20

40 = 2/5

Chickens = 1/5



6. Circle the fractions below that are worth less than one half.

$\frac{1}{10}$, $\frac{3}{8}$, $\frac{9}{12}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{3}{5}$

Decimal Multiplication (using the 2, 3 and 5 times tables)

Complete the following questions.

Section 1

1. 208 x 0.32 = 66.56
2. 126 x 0.011 = 1.386
3. 0.033 x 0.13 = 0.00429
4. 2.14 x 0.55 = 1.177
5. 0.027 x 0.051 = 0.001377
6. 109 x 2.2 = 239.8

Section 2

1. 0.238 x 55 = 13.09
2. 0.65 x 0.13 = 0.0845
3. 28.8 x 0.35 = 10.08
4. 0.124 x 3.5 = 0.434
5. 0.5 x 5.2 = 2.6
6. 15.5 x 0.052 = 0.806

Section 3

1. 0.0251 x 2.3 = 0.05773
2. 16 x 0.35 = 5.6
3. 0.153 x 0.35 = 0.05355
4. 0.26 x 0.23 = 0.0598
5. 0.0271 x 15 = 0.4065
6. 0.0168 x 15 = 0.252

Section 4

1. 0.59 x 51 = 30.09
2. 0.227 x 3.2 = 0.7264
3. 40 x 0.032 = 1.28
4. 133 x 0.53 = 70.49
5. 0.0018 x 0.032 = 0.0000576
6. 0.96 x 55 = 52.8

Understanding Percentages

1. Four children have taken four different maths tests. Their scores are below. Each score has been given as a basic score and as a percentage.

Meredith	8 out of 50	100%
Christina	27 out of 30	16%
April	5 out of 10	90%
Derek	15 out of 15	50%

   a. Draw lines to match up each of the percentages with the most likely scores.

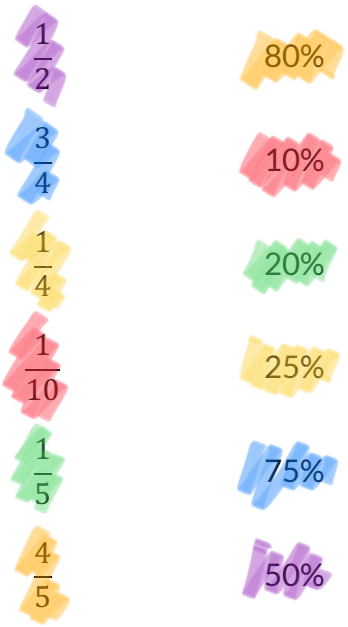
   b. Based on these scores, who is the best mathematician? Derek

   c. Who is the worst mathematician? Meredith

2. The same children take four English tests. Their scores are below. Match each score to the most likely percentage.

Meredith	19 out of 20	5%
Christina	2 out of 40	50%
April	22 out of 44	20%
Derek	8 out of 40	95%

3. Match up the following fractions with their equivalent percentages.



Percentages 1

Complete the following questions.

Section 1

1. 40% of 510 = 204
2. 80% of 30 = 24
3. 40% of 960 = 384
4. 10% of 320 = 32
5. 30% of 710 = 213
6. 40% of 940 = 376

Section 2

1. 50% of 180 = 90
2. 90% of 850 = 765
3. 70% of 570 = 399
4. 40% of 800 = 320
5. 100% of 660 = 660
6. 50% of 450 = 225

Section 3

1. 60% of 12 = 7.2
2. 80% of 13 = 10.4
3. 40% of 8 = 3.2
4. 90% of 91 = 81.9
5. 80% of 68 = 54.4
6. 100% of 37 = 37

Section 4

1. 40% of 30 = 12
2. 30% of 71 = 21.3
3. 90% of 11 = 9.9
4. 90% of 71 = 63.9
5. 20% of 35 = 7
6. 60% of 80 = 48

Section 5

1. 5% of 4000 = 200
2. 7% of 2600 = 182
3. 4% of 8100 = 324
4. 6% of 700 = 42
5. 7% of 4300 = 301
6. 8% of 4300 = 344
7. 3% of 1900 = 57
8. 4% of 6700 = 268
9. 2% of 9800 = 196
10. 6% of 3300 = 198

Percentages 2

Section 1

1. 75% of 300 = 225
2. 80% of 500 = 400
3. 74% of 600 = 444
4. 3% of 1000 = 30
5. 39% of 700 = 273
6. 9% of 100 = 9

Section 2

1. 64% of 400 = 256
2. 23% of 5,000 = 1,150
3. 23% of 300 = 69
4. 41% of 800 = 328
5. 12% of 300 = 36
6. 86% of 700 = 602

Section 3

1. 83% of 900 = 747
2. 33% of 400 = 132
3. 55% of 700 = 385
4. 10% of 400 = 40
5. 91% of 500 = 455
6. 4% of 3,000 = 120

Section 4

1. 83% of 340 = 282.2
2. 14% of 210 = 29.4
3. 5% of 880 = 44
4. 50% of 360 = 180
5. 14% of 1,400 = 196
6. 99% of 600 = 594

Section 5

1. 74% of 960 = 710.4
2. 93% of 90 = 83.7
3. 73% of 880 = 642.4
4. 90% of 880 = 792
5. 72% of 790 = 568.8
6. 100% of 790 = 790

Section 6

1. 11% of 1,100 = 121
2. 75% of 4,000 = 3,000
3. 2% of 25 = 0.5
4. 56% of 2,600 = 1,456
5. 19% of 70 = 13.3
6. 23% of 67 = 15.41

Percentages Problems 1

1. Ed has 50 friends on his social media page. 86% of his friends live in the same town as him. How many people is this? 43

2. A brand new car in 2015 costs £13,200. In 2016, the price of the car is reduced by 5%. How much will the car cost now? £12,540

3. Nicky wants to buy two handbags costing £240 each. At Shop A, Nicky can get a 40% reduction if she buys 2 bags. At Shop B, she can get £100 off her total bill. Which shop should Nicky buy from? Shop A
   A = 480 x 60% = £288, B = £380

4. A bottle of orange juice contains 700ml. Buddy drinks 35% of the juice. How much is left? 455ml
   35% = 245ml

5. Daisy the florist bought 800 roses to sell on Valentine's Day. At the end of the day, she has 7% of her stock remaining. How many roses did she sell? 744
   7% = 56

6. India currently receives £3.50 a week in pocket money. Her mum offers her either a 20% rise or a 60p rise. Which offer should India prefer?
   20% = 70p India should prefer 20% increase.

7. Pizza Land promise their customers that if their pizza is cold upon delivery, they get a free pizza. Pizza Land delivered 3,300 pizzas last year. If 3% customers complained about cold pizzas, how many pizzas did Pizza Land have to give away for free? 99 pizzas

8. Prices at Mr. Patel's newsagents are being increased by 5%. Write the new prices of the following magazines.

   a. Rogue - £3.20 £3.36
   b. Belle - £2.80 £2.94
   c. Girl Chat - 80p 84p
   d. BQ - £4 £4.20

Converting Decimals to Percentages and Vice Versa

Section 1

Convert the following decimals into percentages.

1. 0.29 = 29%
2. 0.5 = 50%
3. 0.19 = 19%
4. 0.74 = 74%
5. 0.02 = 2%
6. 0.09 = 9%
7. 0.37 = 37%
8. 0.26 = 26%
9. 0.6 = 60%
10. 0.22 = 22%
11. 0.59 = 59%
12. 0.1 = 10%

Section 2

Convert the following percentages into decimals.

1. 94% = 0.94
2. 58% = 0.58
3. 7% = 0.07
4. 22% = 0.22
5. 50% = 0.5
6. 40% = 0.4
7. 8% = 0.08
8. 6% = 0.06
9. 80% = 0.8
10. 100% = 1
11. 55% = 0.55
12. 57% = 0.57

Section 3

Convert the following decimals into percentages.

1. 0.85 = 85%
2. 0.25 = 25%
3. 0.49 = 49%
4. 0.27 = 27%
5. 0.01 = 1%
6. 0.92 = 92%
7. 0.33 = 33%
8. 1 = 100%
9. 0.72 = 72%
10. 0.08 = 8%
11. 0.35 = 35%
12. 0.09 = 9%

Section 4

Convert the following percentages into decimals.

1. 75% = 0.75
2. 82% = 0.82
3. 5% = 0.05
4. 92% = 0.92
5. 90% = 0.9
6. 10% = 0.1
7. 4% = 0.04
8. 58% = 0.58
9. 48% = 0.48
10. 86% = 0.86
11. 30% = 0.3
12. 62% = 0.62

Section 5

Convert the following decimals into percentages.

1. 0.999 99.9%
2. 0.407 40.7%
3. 0.14 14%
4. 0.082 8.2%
5. 0.453 45.3%
6. 0.852 85.2%
7. 0.752 75.2%
8. 0.009 0.9%
9. 0.968 96.8%
10. 0.032 3.2%
11. 0.335 33.5%
12. 0.38 38%

Quick Refresher

1. Which is greater: $\frac{1}{3}$ or $\frac{1}{2}$? $\frac{1}{2}$
2. Write $\frac{14}{20}$ in its simplest form. $\frac{7}{10}$
3. How many twelfths are in $\frac{1}{3}$? 4
4. What is $\frac{1}{3}$ plus $\frac{1}{3}$? $\frac{2}{3}$

Converting Fractions to Percentages

Section 1

Use equivalent fractions to convert the following fractions to percentages. Use your percentages to write the fractions as decimals.

E.g. $\frac{30}{50} = \frac{60}{100} = 60\% = 0.6$

1. $\frac{35}{100} = 35\%$
2. $\frac{2}{10} = \frac{2}{100} = 2\%$
3. $\frac{89}{100} = 89\%$
4. $\frac{1}{10} = \frac{10}{100} = 10\%$
5. $\frac{20}{100} = 20\%$
6. $\frac{1}{4} = \frac{25}{100} = 25\%$
7. $\frac{9}{10} = \frac{90}{100} = 90\%$
8. $\frac{42}{100} = 42\%$
9. $\frac{3}{4} = \frac{75}{100} = 75\%$
10. $\frac{8}{100} = 8\%$

Section 2

Use equivalent fractions to convert the following fractions to percentages.

E.g. $\frac{30}{50} = \frac{60}{100} = 60\%$

1. $^{32}/_{50} = \frac{64}{100} = 64\%$
2. $^{12}/_{25} = \frac{48}{100} = 48\%$
3. $^{99}/_{100} = 99\%$
4. $^{8}/_{10} = \frac{80}{100} = 80\%$
5. $^{13}/_{20} = \frac{65}{100} = 65\%$
6. $^{5}/_{20} = \frac{25}{100} = 25\%$
7. $^{19}/_{25} = \frac{76}{100} = 76\%$
8. $^{48}/_{50} = \frac{96}{100} = 96\%$
9. $^{1}/_{10} = \frac{10}{100} = 10\%$
10. $^{2}/_{100} = 2\%$

Converting Fractions to Percentages Problems

Section 1

1. I have 18p, what percentage is that of £1? 18%

2. Rose had £50 and has now spent £27. What percentage of her money has she got left?
   50 − 27 = 23 $\frac{23}{50} = \frac{46}{100} = 46\%$

3. Apollo spends 25% of his day on the computer. How many hours does he not spend on the computer?
   25% = 6 hrs 18 hours

4. Jim has bought a 1kg bag of flour. So far, he has used 130g of flour. What percentage of the bag has he used? $\frac{130}{1000} = 13\%$

5. Emma is an actress that has been on 50 auditions in the last year. She has been successful in 14% of her auditions. How many auditions is this? $\frac{14}{100} = \frac{7}{50}$ 7 auditions

6. A one-litre bottle of water was half full before Victoria poured out 210ml. What percentage of the bottle is left? $\frac{290}{1000} = 29\%$
   500 − 210 = 290ml

7. A magazine usually costs £4 but its price has been reduced by 30% today. How much does the magazine cost now? £2·80

8. A department store has 80 members of staff altogether. On Saturday, 16 members of staff are at work. What percentage of the staff is this?
   $\frac{16}{80} = \frac{2}{10} = 20\%$

9. A new iPhone 9 cost £680 in August but was reduced by 32% in September. How much does the iPhone 9 cost now? £462·40
   32% = £217·60

10. A 300ml bottle of shampoo is 27% water. How much water is in a bottle?
    27% of 300 = 81 ml

11. Mohinder has to write a minimum of 10,000 words for his university dissertation. He has written 45% of the dissertation already. How many words does he still need to write?
    55% of 10,000 = 5,500

Section 2

1. In a year group of 300 children, 18 children are off school today. What percentage of the children are present?

$\frac{18}{300} = \frac{6}{100} = 6\%$ $100 - 6\% = 94\%$

2. Ahmed has scored 81 out of 90 in his English test this week. What is this as a percentage?

$\frac{81}{90} = \frac{9}{10} = 90\%$

3. A launderette charges £3.20 to wash a small load. Large loads cost 30% more. How much will Sam pay if he needs to wash two large loads and one small load?

30% of $3.20 = 96p$ Large $= £4.16$ $£11.52$

4. A pair of shoes cost £85 originally. The price has been reduced by 20% in a sale. How much do the shoes cost now?

$20\% = £17$ $£68$

5. Two classes are raising money for a charity event. The Blue Class raised £308. The Red Class raised 14% more. How much did the two classes raise altogether?

$14\% = 43.12$ $£308 + £351.12 = £659.12$

6. A school has been badly affected by a recent virus. Out of 700 children, 196 are off school today. What percentage of children are off?

$\frac{196}{700} = \frac{28}{100} = 28\%$

7. Morecambe Railway Station has 1000 train arrivals per month. 890 trains departed on time. What percentage is this?

$\frac{890}{1000} = 89\%$

8. Three friends share £10 between them. Dan receives 34% of the total. Hannah receives two-fifths of the total and Tommy receives the rest. How much does Tommy receive?

Dan $= £3.40$, Han $= £4$ Tommy receives £2.60

9. There are 50 marks available in a maths test. Pankaj got 42 marks. What was his percentage score?

$\frac{42}{50} = \frac{84}{100} = 84\%$

10. In the first mock test she completed, Bushra scored 180. In the next mock, her score was 15% better. What was her score in the second mock?

$15\% = 27$ $180 + 27 = 207$

11. There are 96 cars in a car park. 25% of the cars are blue and one-eighth are white. If a car is picked at random, what is the probability that it is not blue or white?

Blue $= 24$, White $= 12$ / 36 Probability $= \frac{60}{96} = \frac{5}{8}$

Fractions Problems - Mixed

1. One-fifth of the children at a karate class are girls. There are 5 girls in a class. How many children are in the class? 5 = 1/5 5/5 = 25

2. Ella leaves school at 3:20pm. She arrives home one third of an hour later. At what time does she arrive home? 3:20 + 20 mins = 3:40 p.m.

3. Shawn is two-thirds of his dad's height. Shawn is 120cm. How tall is his dad? 120 = 2/3 60 = 1/3 Dad = 180 cm

4. Musicland have 200 CDs originally priced at £12 each. Musicland have reduced all of their prices by half. If Musicland sell all of their CDs, how much money will they make? £6 x 200 = £1,200

5. Which would you rather have: $^{4}/_{5}$ of £30 or $^{1}/_{2}$ of 50? 1/2 of 50

6. Nnenna makes 80 lollipops. Her family eats $^{3}/_{5}$ of the lollipops and she sells 18. How many lollipops does she have left? 3/5 = 48 18 + 48 = 66 80 - 66 = 14 left

7. Cheese at Waitflower costs 80p per kg. Regina buys $1\frac{1}{2}$ kg. How much does she pay? £1.20

8. Noah is two thirds as tall as his mother. Noah is one metre shorter than his father. Noah's father is 2m tall. How tall is Noah's mother? Noah = 1m 2/3 = 1m 1/3 = 50cm Noah's mother = 150 cm

9. How many minutes are there in three-quarters of an hour? 45 minutes

10. Walter has bought a concert ticket for £100. However, he can no longer attend so he sells the ticket to his friend Rita for three-quarters of the original price. How much does Rita pay for the ticket? 3/4 of 100 = £75

Decimal Addition and Subtraction

Section 1

1. 41 + 94.4 = 135.4
2. 1941.22 + 682.5 = 2,623.72
3. 8 + 88.2 = 96.2
4. 68.82 + 70.949 = 139.769
5. 96 + 206.3 = 302.3
6. 69.5 + 1702.014 = 1,771.514
7. 1371 + 690.4 = 2,061.4
8. 212.47 + 62.158 = 274.628
9. 81 + 50.9 = 131.9
10. 878.07 + 91.401 = 969.471

Section 2

1. 61.099 - 17.02 = 44.079
2. 112.8 - 85 = 27.8
3. 1682.209 - 90.17 = 1,592.039
4. 534 - 40.5 = 493.5
5. 67.9 - 15.339 = 52.561
6. 1683 - 282.3 – 1000 = 400.7
7. 71.108 - 23 = 48.108
8. 12.1 - 8 = 4.1
9. 441.645 - 23 = 418.645
10. 1921 - 1682.9 = 238.1

Section 3

1. 1274.8 - 812 = 462.8
2. 212.8 - 62.909 = 149.891
3. 58.964 - 32.73 - 24 = 2.234
4. 1942 - 49.50 = 1892.5
5. 1614 - 21.1 – 30.05 = 1562.85

Section 4

1. 1184.925 + 334.669 + 99.9 = 1,619.494
2. 55.94 + 95.438 = 151.378
3. 377.69 + 690.282 + 65.5 = 1,133.472
4. 77 + 1607.99 + 163.26 = 1,848.25
5. 66 + 453.8 = 519.8

Division With Decimal Remainders (Times Tables: 2, 5, 11)

Complete the following division questions. Write your answers as decimal numbers.

Section 1

1. 4453 ÷ 2 = 226.5
2. 4036 ÷ 5 = 807.2
3. 6290 ÷ 2 = 3145
4. 2836 ÷ 5 = 567.2
5. 7030 ÷ 11 = 639.09
6. 7703 ÷ 11 = 700.27

Section 2

1. 6563 ÷ 2 = 3,281.5
2. 1900 ÷ 5 = 380
3. 5874 ÷ 2 = 2937
4. 1731 ÷ 11 = 157.36
5. 2724 ÷ 11 = 247.63
6. 5485 ÷ 11 = 498.63

Section 3

1. 2021 ÷ 5 = 404.2
2. 9820 ÷ 11 = 892.72
3. 2093 ÷ 5 = 418.6
4. 3934 ÷ 5 = 786.8
5. 5189 ÷ 5 = 1,037.8
6. 7856 ÷ 11 = 714.18

Section 4

1. 2786 ÷ 2 = 1,393
2. 1807 ÷ 5 = 361.4
3. 4767 ÷ 5 = 953.4
4. 836 ÷ 11 = 76
5. 6638 ÷ 11 = 603.45
6. 3441 ÷ 2 = 1,720.5

Section 5

1. 3069 ÷ 11 = 279
2. 5303 ÷ 11 = 482.09
3. 7712 ÷ 11 = 701.09
4. 1589 ÷ 11 = 144.45
5. 7763 ÷ 2 = 3,881.5
6. 7627 ÷ 2 = 3,813.5

Division With Decimal Remainders (Times Tables: 3,4,5,9)

Complete the following division questions. Write your answers as decimal numbers.

Section 1

1. 4404 ÷ 3 = 1,468
2. 1089 ÷ 5 = 217.8
3. 8429 ÷ 5 = 1,685.8
4. 9707 ÷ 9 = 1078.$\dot{5}$
5. 5624 ÷ 9 = 624.$\dot{8}$
6. 3610 ÷ 9 = 401.$\dot{1}$

Section 2

1. 9379 ÷ 4 = 2,344.75
2. 6336 ÷ 5 = 1,267.2
3. 7378 ÷ 4 = 1,844.5
4. 7455 ÷ 3 = 2,485
5. 1509 ÷ 5 = 301.8
6. 7122 ÷ 5 = 1,424.4

Section 3

1. 6304 ÷ 3 = 2,101.$\dot{3}$
2. 8217 ÷ 3 = 2,739
3. 7918 ÷ 3 = 2,639.$\dot{3}$
4. 6506 ÷ 5 = 1,301.2
5. 4955 ÷ 4 = 1,238.75
6. 1403 ÷ 4 = 350.75

Section 4

1. 2369 ÷ 5 = 473.8
2. 4910 ÷ 5 = 982
3. 7043 ÷ 5 = 1,408.6
4. 902 ÷ 9 = 100.$\dot{2}$
5. 3102 ÷ 4 = 775.5
6. 5625 ÷ 4 = 1,406.25

Section 5

1. 1955 ÷ 5 = 391
2. 8712 ÷ 4 = 2,178
3. 6907 ÷ 3 = 2,302.$\dot{3}$
4. 4426 ÷ 3 = 1,475.$\dot{3}$
5. 6992 ÷ 9 = 776.$\dot{8}$
6. 5751 ÷ 3 = 1,917

Rounding – Whole Numbers

Section 1

Round the following numbers to the nearest 10.

1. 3,463 3,460
2. 3,909 3,910
3. 76 80
4. 483 480
5. 1,665 1,670
6. 10,103 10,100
7. 3,433 3,430
8. 206,837 206,840
9. 869 870
10. 4,660 4,660
11. 163 160
12. 8 10

Section 2

Round the following numbers to the nearest hundred.

1. 3,229 3,200
2. 86 100
3. 42 0
4. 2,260 2,300
5. 1,059 1,100
6. 816,789 816,800
7. 11,542 11,500
8. 1,259 1,300
9. 807 800
10. 1,434 1,400
11. 13,906 13,900
12. 32 0

Section 3

Round the following numbers to the nearest thousand.

1. 73,033 73,000
2. 768 1,000
3. 29,514 30,000
4. 46,465 46,000
5. 4,145 4,000
6. 819,742 820,000
7. 1,654 2,000
8. 270,890 271,000
9. 67,116 67,000
10. 1,154,783 1,155,000

Rounding – Decimal Numbers

Section 1

Round the following numbers to the nearest whole number.

1. 10,312.837 10,313
2. 25.9 26
3. 386.16 386
4. 0.389 0
5. 46.4 46
6. 345.88 346
7. 145.2 145
8. 7.08 7
9. 5,112.14 5,112
10. 206.6 207

Section 2

Round the following numbers to one decimal place.

1. 224.384 224.4
2. 78.0173 78.0
3. 8,172.407 8,172.4
4. 197.856 197.9
5. 0.891 0.9
6. 179.898 179.9
7. 245.3089 245.3
8. 0.88 0.9
9. 260.422 260.4
10. 186.674 186.7
11. 40.41 40.4
12. 26.317 26.3

Section 3

Round the following numbers to two decimal places.

1. 8,395.3831 8,395.38
2. 208.35507 208.36
3. 11,349.469 11,349.47
4. 0.2954 0.30
5. 264.38147 264.38
6. 0.353 0.35
7. 215.1234 215.12
8. 195.78369 195.78
9. 2.359 2.36
10. 17.4661 17.47
11. 343.23044 343.23
12. 248.455 248.46

Rounding Cont.

Section 1

	Round to:		
	Nearest Hundred	Nearest Thousand	Nearest Ten Thousand
466,702	466,700	467,000	470,000
40,620	40,600	41,000	40,000
368,254	368,300	368,000	370,000
32,224	32,200	32,000	30,000
400,249	400,200	400,000	400,000
3,487,701	3,487,700	3,488,000	3,490,000
163,982	164,000	164,000	160,000
121,202	121,200	121,000	120,000
45,771	45,800	46,000	50,000
1,308,099	1,308,100	1,308,000	1,310,000
267,915	267,900	268,000	270,000

Section 2

	Round to:		
	Nearest Whole	One Decimal Place	Two Decimal Places
265.02870	265	265.0	265.03
184.3949	184	184.4	184.39
392.03546	392	392.0	392.04
340.6471	341	340.6	340.65
172.9989	173	173.0	173.00
0.40132	0	0.4	0.40
258.21307	258	258.2	258.21
233.9102	234	233.9	233.91
0.6636	1	0.7	0.66
135.168309	135	135.2	135.17
90.30019	90	90.3	90.30

Converting Percentages to Fractions

Write the following percentages as fractions in their simplest form.

Section 1

1. 75% = $\frac{3}{4}$
2. 97% = $\frac{97}{100}$
3. 20% = $\frac{1}{5}$
4. 62% = $\frac{31}{50}$
5. 4% = $\frac{1}{25}$
6. 82% = $\frac{41}{50}$
7. 7% = $\frac{7}{100}$
8. 50% = $\frac{1}{2}$
9. 70% = $\frac{7}{10}$
10. 80% = $\frac{4}{5}$

Section 2

1. 49% = $\frac{49}{100}$
2. 100% = 1
3. 95% = $\frac{19}{20}$
4. 60% = $\frac{3}{5}$
5. 44% = $\frac{11}{25}$
6. 20% = $\frac{1}{5}$
7. 58% = $\frac{29}{50}$
8. 76% = $\frac{19}{25}$
9. 10% = $\frac{1}{10}$
10. 25% = $\frac{1}{4}$

Tick the following boxes as appropriate.

	More than half	Less than half
$\frac{1}{6}$		✓
0.35		✓
0.099		✓
83%	✓	
$\frac{9}{15}$	✓	

Review 1

1. What is the value of the 4 in 0.004? 4 thousandths
2. What is the value of the 3 in 153.8? 3 units/ones
3. What is the value of the 5 in 5000.4? 5 thousands
4. Find 42% of 1. 0.42
5. What is 83% of 100? 83
6. What is 15% of 10? 1.5
7. What is 42.6% of 100? 42.6
8. What is 1% of 1000? 10
9. What is 158 minus 7.682? 150.318
10. There are 34 boys at a workshop of 50 children.
    a. What percentage of the attendees were boys? 68%
    b. What percentage of attendees were girls? 32%
11. 85% of people are afraid of spiders. What percentage of people are not afraid of spiders? 15%
12. Eva spends two-tenths of her weekly shopping bill on fruit and vegetables. What percentage is this? 20%
13. At a zoo, only 21% of animals were born at the zoo. If there are 100 animals in the zoo, how many were born there? 21
14. What is $\frac{12}{50}$ as a percentage? 24%
15. What is 263 divided by 100? 2.63

Percentages Problems 2

Audioworld = £27 off

1. Naomi wants to buy 2 Beatz headphones. Headphones cost £45 if bought individually. AudioWorld currently have 30% off all headphones. However, Naomi also has a voucher for £20 off any purchase at Sound Station. Where should she buy her headphones if she wants to get the lowest price? AudioWorld
   Sound Station = £20 off
2. Elsa is buying mittens. Usually, the mittens cost £6.00, but today the shop is offering 40% off. How much will Elsa pay? £3.60
   40% = £2.40
3. Simba is buying sunglasses. The original price of the sunglasses was £88. Today the sunglasses have 20% off. How much will Simba pay?
   £88 − 17.60 = £70.40
4. A family holiday to Mexico costs £5,030. The Patel family have got a deal for 10% off the price of their holiday. How much will they pay after their holiday is discounted? £5,030 − 503 = £4,527
5. Adult flights to Australia cost £740 each. Children's tickets cost £500. If a family buy two adult tickets, they get a child's ticket half price. How much will it cost for 2 adults and 1 child to fly to Australia? £1,730
   2 adults = £1480, Child = £250
6. Lucille has scored 34 out of 50 in a test. Desi has scored 75%. Which child did better in their test? Desi did better
   Lucille = 68%
7. There are 350 children at Andrew's school. 84% of children have school dinners. How many children eat school dinners? 294
   84% of 350 =
8. There are 280 people on a flight. 35% of people choose the vegetarian meal option. How many people is this? 98
   35% of 280 =
9. Which one of these gives the answer 40?

   a. $\frac{3}{5}$ of 80 48

   b. 10% of 400 40

   c. $\frac{1}{5}$ of 400 80

   d. 42% of 100 42

10. Lenny buys a plant pot in a 50% off sale. The plant pot originally cost £8.50. How much change will she get from a £10 note after the discount is applied? £10 − 4.25 = £5.75

Percentages and Decimals Review

Complete the following calculations.

Section 1

1. 37% of 100 = 37
2. 48% of 10 = 4.8
3. 56% of 1000 = 560
4. 75% of 10 = 7.5
5. 12% of 100 = 12
6. 3% of 1000 = 30
7. 99% of 10 = 9.9
8. 5% of 10 = 0.5
9. 25% of 10,000 = 2,500
10. 10% of 100 = 10

Section 2

1. 35% of 1 = 0.35
2. 24.5% of 100 = 24.5
3. 40% of 1 = 0.4
4. 50% of 1 = 0.5
5. 12% of 1000 = 120
6. 99.9% of 1000 = 999
7. 0.5% of 1 = 0.005
8. 0.5% of 100 = 0.5
9. 0.5% of 1000 = 5
10. 9% of 100 = 9

Section 3

Write "True" or "False" next to the following statements.

1. 0.73 < 58% 0.58 False
2. $\frac{3}{5}$ > 0.25 0.6 True
3. 0.06 > 7% 0.07 False
4. 0.25 = $^3/_4$ 1/4 False
5. $\frac{42}{50}$ > 0.82 0.84 True
6. $^{15}/_{20}$ = $^3/_4$ True
7. 1% = 0.1 0.01 10% False
8. 5% = $^1/_{20}$ True
9. $^{65}/_{100}$ < 0.7 0.65 True
10. 30% > 0.03 0.3 True

Review 2

Section 1

Rewrite the following numbers, fractions and percentages in ascending order.

1. $\frac{1}{5}$ (20%) 0.15 (15%) 51% 5%

   5% | 0.15 | 1/5 | 51%

2. 0.4 (40%) $\frac{1}{20}$ (5%) 20% 4%

   4% | 1/20 | 20% | 0.4

3. 1 (100%) 10% 0.11 (11%) 0.01 (1%)

   0.01 | 10% | 0.11 | 1

4. 31% 0.03 (3%) $\frac{1}{3}$ (33.3%) $\frac{3}{10}$ (30%)

   0.03 | 3/10 | 31% | 1/3

5. $\frac{1}{1000}$ (0.1%) $\frac{43}{50}$ (84%) 50% 43%

   1/1000 | 43% | 50% | 43/50

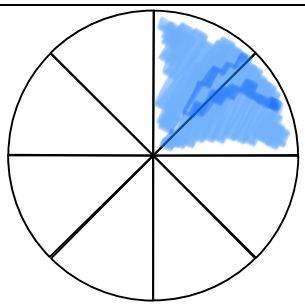
Section 2

Write "True" or "False" next to the following statements as appropriate.

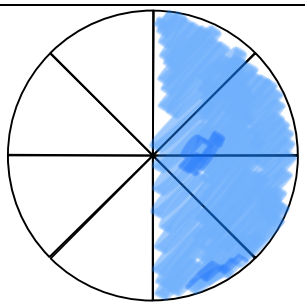
1. 0.41 = $\frac{41}{50}$ (41/100) False
2. $\frac{1}{4}$ < 0.25 False
3. $\frac{14}{25}$ = 0.56 (56/100) True
4. $\frac{12}{100}$ = 12% True
5. $\frac{8}{1000}$ > 0.08 (0.008) False
6. 0.32 = 3.2% (32%) False
7. $\frac{15}{20}$ = 75% (3/4 = 3/4) True
8. 400 ÷ 1000 = 40% (0.4 = 0.4) True
9. $\frac{1}{10}$ > 1% (10%) True
10. 95% > 0.098 (0.95) True

Fractions and Degrees

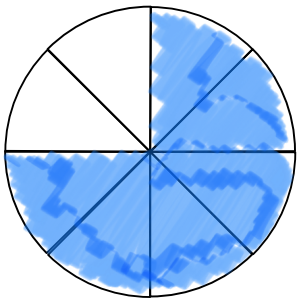
There are 360° in a circle. Use this information to help you to complete the following.



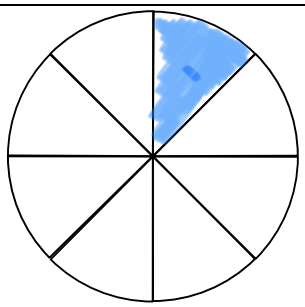
Colour one quarter of this circle. How many degrees is this? 90°



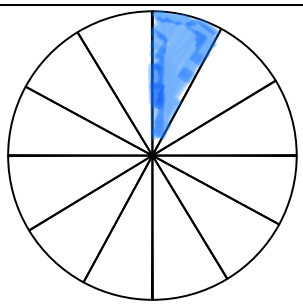
Colour one half of this circle. How many degrees is this? 180°



Colour three quarters of this circle. How many degrees is this? 270°

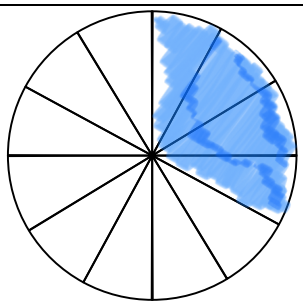


Colour one-eighth of the circle. How many degrees is this? 45°



A clock is a circle split into twelve sections. How many degrees will be between 12 and 1 on the clock?

30°



A clock is a circle split into twelve sections. How many degrees will be between 12 and 4 on the clock?

120°

Ratio and Proportion

Ratio Introduction

1. In a classroom, there are 3 boys to every 2 girls. There are 18 boys in total. How many girls are there?

B : G
3 : 2 (×6)
18 : 12 (×6)

12 girls

2. A horse farm has three mares for every stallion. If there are nine stallions on the farm, how many mares are there?

M : S
3 : 1 (×9)
27 : 9 (×9)

27 mares

3. Becky is making a cake. The recipe she is following is for a 500g cake and uses 75g of butter. Becky needs to make 1500g of cake. How much butter does she need to use?

C : B
500 : 75 (×3)
1500 : 225 (×3)

225g of butter

4. In a smoothie, Srinivas mixes raspberries, blueberries and cranberries in a ratio of 3:2:1. If he uses 50g of blueberries, how many grams of raspberries will he need?

r : b : c
3 : 2 : 1 (×25)
75 : 50 : (×25)

75g of raspberries

5. Amy puts four times as much flour as sugar in her pancakes. If she uses 200g of flour, how much sugar does she use?

F : S
4 : 1 (×50)
200 : 50 (×50)

50g of sugar

6. In Mr. Boateng's maths class, there are 12 girls and 18 boys. Express this as a ratio of boys to girls in its simplest form.

B : G
18 : 12 (÷6)
3 : 2 (÷6)

B : G
3 : 2

Proportion Introduction - For Every

1. A harvest collection has three tins of food for every two jars of food. If the collection has 65 items in total, how many of these items are in jars?

T : S
3 : 2 = 5 (×13)
39 : 26 = 65 (×13)

26 jars of food

2. A football club has 140 members altogether. There are four adults for every three children. How many children are there?

A : C
4 : 3 = 7 (×20)
80 : 60 = 140 (×20)

60 children

   a. How many adults are there?

80 adults

3. Alexa saves £4 a week and Toby saves £5 a week. Together, they have saved £27. How much money has Alexa saved so far?

A : T
4 : 5 = 9 (×3)
12 : 15 = 27 (×3)

Alexa has saved £12

   a. How many weeks did it take Alexa to save this amount?

3 weeks

4. When mixing paint, Abi uses three times as much white paint as red paint. If she uses 450 millilitres of white paint, how much red does she use?

W : R
3 : 1 (×150)
450 : 150 (×150)

150 millilitres of red paint

g : b
×100 (P : 5 = C
100 : 500 = 600) ×100

5. For a different painting, Abi uses one millilitre of green paint for every five millilitres of blue paint. If she uses 600 millilitres of paint in total, how much blue paint has she used? 500 ml of blue paint

6. A bracelet is made up of silver, red and purple beads in the ratio 1:2:4. If there are 28 beads in total, how many red beads are there? 8 red beads

S : R : P
1 : 2 : 4 = 7
4 : 8 : 16 = 28) ×4

   a. How many purple beads are on the bracelet? 16 purple beads

Proportion Introduction - In Every

1. At a dance school, 2 in every 5 students are boys. What is the ratio of girls to boys? G : B
3 : 2

G : B
3 : 2

×20 (60 : 40 = 100) ×20

   a. If there are 60 girls at the school, how many boys are there? 40 boys

2. Emilia throws away one in five of the vegetables that she buys each week. What is the ratio of thrown out vegetables to kept vegetables?

Th : K
1 : 4

   a. If she has bought 40 vegetables this month, how many has she thrown away? 8 have been thrown away

Th : K
×8 (1 : 4 = 5
8 : 32 = 40) ×8

   b. How many vegetables has she used? 32 have been used

3. In a school assembly, one in every ten students receives a certificate. 21 students receive certificates. How many children are there altogether in the assembly? 210 children

C : N
1 : 9 = 10
×21 (21 : 189 = 210) ×21

4. Richard receives a speeding ticket for one in every thirty trips he makes. If he has made 600 trips this year, how many speeding tickets does he receive? 20 speeding tickets

T : N
×20 (1 : 29 = 30
20 : 580 = 600) ×20

   a. How many trips does he make without receiving a speeding ticket? 580 trips

5. In Houston, 2 in every 7 days are cloudy. In a 5-week period, how many cloudy days are there? 10 cloudy days

C : N
2 : 5 = 7
×5 (10 : 25 = 35) ×5

6. A restaurant makes two desserts: blueberry pie and creme brûlée. The restaurant makes the desserts in the ratio 3:7. If the restaurant makes 21 blueberry pies, how many creme brûlées do they make? 49 creme brûlées

b : c
3 : 7
×7 (21 : 49) ×7

7. At a school meeting, 3 in every 5 attendees are women. If there are 20 men in attendance, how many people are at the meeting in total? 50 people

W : M
3 : 2 = 5
×10 (30 : 20 = 50) ×10

Ratio

1. In a class of children, there are 3 boys for every 2 girls. If there are 16 girls, how many boys are there?

2. Saffron costs £65 for every 10g. Jade wants to buy 1g of saffron. How much will this cost?

3. Holly is buying flowers from the market. She wants to buy daisies, roses and lilies in the ratio 3:4:2. If Holly buys 24 roses, how many daisies and lilies must she buy?

4. At a dog home, there are 5 Labradors for every 2 Terriers. If there are 14 Terriers, how many Labradors are there?

Proportion

1. Kenan is throwing a party. 2 in every 3 bottles he buys are orange soda, the other bottles are lemonade. Altogether, Kenan buys 36 bottles. How many bottles of orange soda does Kenan buy?

2. At Leonie's house, 4 in every 5 books are fiction, the rest are non-fiction.
   a. If Leonie owns 45 books, how many of the books are non-fiction?
   b. How many books are fiction?

3. Rachel is 3 times as old as Ross. Their ages add up to 12. How old is Rachel?

4. 1 in every 12 children in the UK gets an A in their GCSE English paper. If 12,000 children take the English GCSE, how many children get an A?

5. 3 in every 5 children in a year group have siblings. There are 65 children in the year group. How many children do not have siblings?

6. A pack of nuts contains peanuts, cashews and pistachio nuts in the ratio 1:2:1. Altogether there are 240g of nuts altogether. How many grams of cashews are there?

Ratio and Proportion – Mixed

Section 1

1. It costs £3 to buy two roses.

   a. Based on this information, how much does it cost to buy 6 roses? £9

   b. How much does it cost to buy 5 roses? £1·50 x 5 = £7·50

2. In a forest, 5 in every 8 trees are oak. There are 96 trees altogether. How many of the trees are not oak? 36 trees are not oak

3. A bakery produces bread, cakes and biscuits in the ratio 3:6:1.

   a. If the bakery produces 72 cakes, how many biscuits do they make? 12 biscuits

   b. The bakery's sales are split in the ratio above. If the bakery makes £1,300 on Monday, how much of this money comes from selling loaves of bread? £390 from bread

4. The recipe for a fruit smoothie is below.

Fruit Smoothie Recipe
Makes 400ml

100g blackberries
150ml orange juice
50g mango
200ml water
30g banana

   a. Based on this recipe, if Ann uses 150g of blackberries, how much mango does she use? 75g of mango

   b. On Friday, Ann wants to make 800ml of smoothie. How many grams of banana does she need? 30g x 2 = 60g of banana

   c. On Saturday, Ann only has 20g of mango. How many millilitres of smoothie could she make? 160ml of smoothie

5. 3 litres of ice-cream fill 9 tubs. How many litres would be needed to fill 24 tubs? 24 ÷ 3 = 8 8 litres

6. Tallulah is four times as old as her cousin Lola. Their ages add up to 35. How old is Tallulah?

Tallulah is 28 years old

Section 2

1. What is the cost of 10 rugby balls if 7 rugby balls cost £84.70? £84.70 ÷ 7 = £12.10 £12.10 × 10 = £121
2. Tallulah is four times as old as her cousin Lola. Their ages add up to 35. How old is Tallulah? T : L, 4 : 1 = 5, ×7 = 28 years old Tallulah
3. 3 litres of ice-cream fill 9 tubs. How many litres would be needed to fill 24 tubs? L : T, 3 : 9, ÷3, 24 ÷ 3 = 8 litres
4. 4.5 litres of paint cost £18. How much paint would you get for £90? 4.5l × 5 = 22.5 litres
5. A boy's stride is 50cm, how many metres would he cover in 600 steps? 600 × 50 = 30,000 cm = 300m
6. John walks at 4 km/h. How far will he travel in $5\frac{1}{2}$ hours? 22 km
7. Tawana cycles at 12 km/h.
   a. How far will she travel in 90 minutes? 12 + 6 = 18 km
   b. How far will she travel in 4.25 hours? 48 + 3 = 51 km
   c. How long will it take Tawana to cycle 6km? 60m ÷ 2 = 30mins
   d. How long will it take Tawana to cycle 42km? $\frac{42}{12} = 3\frac{1}{2}$ hours
8. Colin and Milo are splitting a bottle of engine oil between them. Milo receives three times as much as Colin. If they share 2.6 litres of engine oil, how much will Colin receive? M : C, 3 : 1 = 4, ×0.65l, = 2.6 Colin = 0.65l
9. A drink of lemon and lime consists of four parts water for every one-part lemon and one-part lime. How much lime would be needed to make 900ml of the drink? W : Le : Li, 4 : 1 : 1 = 6, ×150, = 900 Lime = 150 ml
10. In a pond, 1 fish in every 7 is a sturgeon, the rest are goldfish. If there are 18 goldfish, how many sturgeons are there? S : G, 1 : 6 = 7, : 18, 3 sturgeons
11. At a school meeting, 3 in every 5 attendees are women. If there are 20 men in attendance, how many people are at the meeting in total? W : M, 3 : 2 = 5, 50 people
12. In Mr. Boateng's maths class, there are 12 girls and 18 boys. Express this as a ratio of boys to girls in its simplest form. B : G, 18 : 12 = 3 : 2
13. Write these ratios correctly in their lowest terms.
    a. 8:12 2 : 3
    b. 20ø:100ø:55ø, ÷5, 4 : 20 : 11
    c. 12:3:45, ÷3, 4 : 1 : 15