N29b Long Division Decimals

1) a) If 48 luxurious pens cost £768,
how much would one of them cost?

b) If 25 tee shirts cost £77.50,
how much would one of them cost?

c) If 53 mobile phones cost £2 119.47,
how much would one of them cost?

2) Cans of juice cost 24p each.

Wendy has £8.65 to spend.

a) What is the maximum number of cans Wendy can buy?

b) How much change does she get?

3) Find the missing digits.

a)
$$14\overline{)\square 0\ 4}\qquad 3\square$$

b)
$$\square 2\overline{)2\square 2}\qquad 2\square$$

© Mathswatch Ltd

N30a/b Prime Numbers Introduction and Factorisation

1) Write down the first 9 prime numbers.

2) Write down the first prime number that comes after 62.

3) Split up the following numbers into the product of their prime factors.

a) 12
b) 45
c) 72
d) 120
e) 550
f) 1296

4) Find the Highest Common Factor (HCF) of the following numbers.

a) 4 and 6
b) 8 and 16
c) 36 and 48
d) 300 and 525
e) 374 and 918
f) 45, 90 and 105

© Mathswatch Ltd

N31a/b

Highest Common Factor
Lowest Common Multiple

1) Find the Highest Common Factor (HCF) of the following numbers.

a) 4 and 6

b) 8 and 16

c) 36 and 48

d) 300 and 525

e) 374 and 918

f) 45, 90 and 105

2) Find the Lowest Common Multiple (LCM) of the following numbers.

a) 8 and 12

b) 30 and 45

c) 15 and 18

d) 4, 6 and 8

e) 24 and 84

f) 72 and 96

3) The bells at Kings School ring every 6 minutes.

At Queens School the bells ring every 5 minutes.

At Princess School the bells ring every 9 minutes.

All three bells ring together at 8.30 am.

When is the next time the bells of the three schools will ring together?

© Mathswatch Ltd

N32 Decimals, Fractions and Percentages

1) Complete the tables.

a)

Fraction	Decimal	Percentage
		50%
	0.25	
$\frac{1}{10}$		
$\frac{1}{3}$		
	0.7	
		40%

b)

Fraction	Decimal	Percentage
$\frac{68}{100}$		
		35%
	0.6	
	$0.\dot{6}$	
		5%
$\frac{13}{50}$		

2) Put these fractions, decimals and percentages in order, smallest to largest.

a) $\frac{1}{2}$, 49%, $\frac{3}{5}$, 0.55

b) 27%, 0.2, $\frac{1}{4}$, $\frac{3}{10}$

c) $\frac{9}{10}$, 95%, 0.99, $\frac{97}{100}$

d) $\frac{1}{3}$, 0.6, $\frac{2}{3}$, 30%

e) 0.125, 10%, $\frac{11}{100}$, 0.09

3) Chris says that $\frac{3}{4}$ is halfway between 0.5 and 100%.

Is Chris correct? You must explain your answer.

4) Emily says that 0.2 is halfway between 10% and $\frac{3}{5}$.

Is Emily correct? You must explain your answer.

© Mathswatch Ltd

N33 Fraction of an Amount

1) Find the following:

a) $\frac{1}{3}$ of 24

b) $\frac{2}{3}$ of 24

c) $\frac{1}{5}$ of 30

d) $\frac{3}{5}$ of 30

e) $\frac{1}{8}$ of 40

f) $\frac{5}{8}$ of 40

2) Work out:

a) $\frac{7}{10}$ of £30

b) $\frac{3}{7}$ of £84

c) $\frac{4}{5}$ of £1.50

d) $\frac{11}{20}$ of £19

e) $\frac{2}{9}$ of £10.98

f) $\frac{8}{13}$ of £31.85

3) Julie has £4.50 pocket money every week.
If she spends $\frac{2}{5}$ of it on a magazine and $\frac{1}{3}$ of it on a dance lesson, how much of the pocket money does she have left?

4) Paul has £7.80 pocket money each week.
He always saves $\frac{1}{3}$ of it.
With the remaining money he spends $\frac{5}{8}$ on comics and the rest on sweets.

(i) How much does he save?

(ii) How much is spent on comics?

(iii) How much does he spend on sweets?

© Mathswatch Ltd

N35 Improper Fractions Mixed Numbers

1) Convert the following improper fractions to mixed numbers.

a) $\frac{5}{4}$

b) $\frac{8}{3}$

c) $\frac{12}{7}$

d) $\frac{20}{9}$

e) $\frac{16}{5}$

f) $\frac{25}{3}$

g) $\frac{30}{7}$

h) $\frac{75}{8}$

i) $\frac{47}{12}$

j) $\frac{100}{9}$

2) Convert the following mixed numbers to improper fractions.

a) $1\frac{3}{5}$

b) $2\frac{1}{4}$

c) $5\frac{2}{3}$

d) $3\frac{3}{5}$

e) $11\frac{2}{7}$

f) $10\frac{1}{9}$

g) $7\frac{5}{8}$

h) $9\frac{4}{5}$

i) $6\frac{3}{11}$

j) $12\frac{3}{4}$

3) Put these numbers in order, lowest to highest.

a) 3.5, $3\frac{1}{5}$, $\frac{11}{3}$

b) $7\frac{1}{4}$, 7.14, $\frac{34}{5}$

c) $1\frac{1}{10}$, 98%, $\frac{5}{4}$, 1

© Mathswatch Ltd

N36 Fractions Adding and Subtracting

1) Work out the following, simplifying your answers where possible.

a) $\frac{2}{7} + \frac{3}{7} = \frac{\square}{7}$

b) $\frac{3}{8} + \frac{1}{8} =$

c) $\frac{7}{9} - \frac{2}{9} = \frac{\square}{9}$

d) $\frac{5}{10} - \frac{1}{10} =$

e) $\frac{1}{6} + \frac{2}{3} = \frac{\square}{18} + \frac{\square}{18} =$

f) $\frac{1}{6} + \frac{2}{3} = \frac{\square}{6} + \frac{\square}{6} =$

g) $\frac{4}{5} - \frac{1}{2} =$

h) $\frac{14}{15} - \frac{3}{5} = \frac{\square}{15} - \frac{\square}{15} =$

2) Work out the following, simplifying your answers where possible.

a) $\frac{3}{8} + \frac{4}{8} =$

b) $\frac{9}{11} - \frac{5}{11} =$

c) $\frac{1}{2} + \frac{1}{3} =$

d) $\frac{5}{7} - \frac{3}{5} =$

e) $\frac{1}{2} + \frac{2}{5} =$

f) $\frac{5}{6} - \frac{1}{4} =$

g) $\frac{5}{12} + \frac{1}{6} =$

h) $\frac{4}{5} - \frac{1}{10} =$

i) $\frac{3}{8} + \frac{1}{2} =$

j) $\frac{8}{9} - \frac{5}{6} =$

3) Write the missing numbers in each of these fraction sums.

a) $\frac{1}{3} + \frac{\square}{6} = 1$

b) $\frac{3}{7} + \frac{12}{\square} = 1$

c) $\frac{8}{5} - \frac{\square}{15} = 1$

d) $\frac{15}{\square} - \frac{1}{4} = 1$

© Mathswatch Ltd

N37 a/b

Fractions - Multiplying and Dividing an Integer

1) Work out the following, giving your answers in their simplest forms

a) $3 \times \frac{1}{4}$

b) $7 \times \frac{1}{7}$

c) $2 \times \frac{4}{5}$

d) $9 \times \frac{1}{3}$

e) $4 \times \frac{4}{9}$

f) $10 \times \frac{3}{8}$

g) $\frac{8}{9} \times 6$

h) $\frac{2}{15} \times 3$

2) Work out the following, giving your answers in their simplest forms

a) $\frac{1}{2}$ of £40

b) $\frac{1}{5}$ of 20 km

c) $\frac{1}{4}$ of 120 kg

d) $\frac{1}{9}$ of £99

e) $\frac{2}{5}$ of 30 cm

f) $\frac{7}{8}$ of £16

g) $\frac{4}{7}$ of 7000 g

h) $\frac{3}{4}$ of £500

3) Work out the following, giving your answers in their simplest forms

a) $3 \div \frac{1}{4}$

b) $7 \div \frac{1}{2}$

c) $12 \div \frac{1}{3}$

d) $9 \div \frac{1}{5}$

e) $10 \div \frac{2}{3}$

f) $8 \div \frac{4}{5}$

g) $3 \div \frac{5}{7}$

h) $15 \div \frac{2}{3}$

4) An industrial machine takes $\frac{3}{4}$ of an hour to produce a very special tool. How long would it take the machine to produce 12 of the tools?

5) A road is 20 km long. Road signs are to be installed every $\frac{2}{3}$ of a kilometre. How many signs will be needed?

© Mathswatch Ltd

N38 Rounding Significant Figures

1) Round the following to 1 significant figure.
   a) 478 cm
   b) 450 cm
   c) 449 cm
   d) 12761 m
   e) 28481 km

2) Round the following to 1 significant figure.
   a) 673.8 cm
   b) 4017.9 kg
   c) 246.83 m
   d) £45.38
   e) 20482.1 kg

3) Round the following to 1 significant figure.
   a) 0.26 ml
   b) 0.043 g
   c) 0.0671 m
   d) 0.000256 km
   e) 0.3822 m

4) Round the following to 1 significant figure.
   a) 962 m
   b) 0.923 cm
   c) 0.971 cm
   d) 0.096 km
   e) 0.00985 km

5) Round the following to 1 significant figure.
   a) £631428
   b) 0.00573 g
   c) £3614.68
   d) 0.493 ml
   e) £968

© Mathswatch Ltd

N39a Percentages
Change to a Percentage

1) Change the following to percentages:

a) 83 out of 100

b) 24 out of 50

c) 9 out of 25

d) 7 out of 20

e) 6 out of 10

f) 72 out of 200

g) 12 out of 40

h) 36 out of 60

2) Nas scores 24 out of 60 in a test.

What is his percentage score?

3) Change the following to percentages, giving your answers to 1 decimal place:

a) 7 out of 24

b) 35 out of 41

c) 92 out of 143

4) Jamie scores 48 out of 70 in his Science test and 38 out of 52 in his Maths test.

He says, “I did better in Science because 48 is a higher score than 38.”

Is he correct? Explain your answer.

© Mathswatch Ltd

A18 Expanding Brackets Harder Questions

1) Expand and simplify

a) $(x + 2)(x + 2)$

b) $(x + 3)(x + 5)$

c) $(x + 7)(x + 1)$

d) $(x + 4)(x + 3)$

e) $(x + 7)(x + 2)$

2) Expand and simplify

a) $(2x + 1)(3x + 2)$

b) $(4x + 3)(2x + 1)$

c) $(3x + 4)(3x + 2)$

d) $(5x + 2)(5x + 7)$

e) $(2x + 10)(2x + 4)$

3) Expand and simplify

a) $(x + 5)(x – 3)$

b) $(x – 2)(x + 4)$

c) $(x – 6)(x – 2)$

d) $(x + 7)(x + 3)$

e) $(x – 8)(x – 2)$

4) Expand and simplify

a) $(2x – 1)(3x + 4)$

b) $(5x – 2)(3x – 1)$

c) $(3x + 4)(2x – 3)$

d) $(5x – 1)(5x – 2)$

e) $(4x + 2)(3x – 5)$

5) Expand and simplify

a) $(x + 5)^2$

b) $(x – 2)^2$

c) $(2x + 3)^2$

d) $(3x – 1)^2$

e) $(4x + 3)^2$

© Mathswatch Ltd

A19a/b Solving Harder Equations

1) Solve the following

a) $2x + 3 = 19$

b) $3x - 2 = 13$

c) $5x - 1 = 9$

d) $3 + 2x = 23$

e) $12 - 3x = 9$

2) Solve the following

a) $2(3x - 1) = 22$

b) $3(x + 7) = 18$

c) $4(5x - 2) = 12$

d) $66 = 6(2x + 3)$

e) $20 = 5(x - 6)$

3) Solve the following

a) $\frac{x - 6}{2} = 3$

b) $\frac{x + 8}{3} = 5$

c) $\frac{2x - 1}{3} = 5$

d) $\frac{6x + 1}{2} = 8$

e) $\frac{7x - 3}{5} = 5$

4) Solve the following

a) $2x + 7 = x + 12$

b) $4x - 5 = 2x + 3$

c) $7x + 2 = 3x + 26$

d) $6x - 7 = 4x - 5$

e) $3x + 4 = x - 7$

5) Solve the following

a) $x - 6 = 2x - 13$

b) $3x + 4 = 5x - 8$

c) $4x + 17 = x - 4$

d) $5 - 2x = x - 7$

e) $2x - 1 = 14 - 3x$

6) Solve the following

a) $2(3x - 1) = 4x + 7$

b) $3(x + 4) = 2(x - 5)$

c) $5(2x - 3) = 3(3x + 4)$

d) $2(2x - 1) = 5(2x - 4)$

e) $2(2x + 3) = 5(x + 3)$

7) Solve the following

a) $\frac{2(x + 1)}{3} = 6$

b) $\frac{4(2x - 3)}{5} = 4$

c) $\frac{2(4x - 5)}{3} = x + 10$

d) $\frac{3(5x + 4)}{2} = 7x - 8$

e) $4 - x = \frac{2(x + 7)}{3}$

© Mathswatch Ltd

A20b Inequalities Solving

1) Solve

a) $2x - 1 \geq 7$

b) $3x + 4 < 19$

c) $5x - 7 \leq 18$

d) $2x + 9 > 5$

e) $4x + 11 \leq 14$

2) Solve

a) $\frac{x}{3} < 7$

b) $\frac{x}{5} - 1 \geq 3$

c) $\frac{2x}{3} + 4 \leq 9$

d) $12 \geq 2x - 1$

e) $20 < 5 + 5x$

3) Solve

a) $2(5x - 1) \leq 18$

b) $3(4x + 2) > 60$

c) $42 > 2(6x + 15)$

d) $4(1 + x) \leq 12$

e) $8(2x - 1) > 12$

4) Solve

a) $2x + 7 \leq x + 9$

b) $x - 6 > 3x - 18$

c) $4x + 3 < 2x - 9$

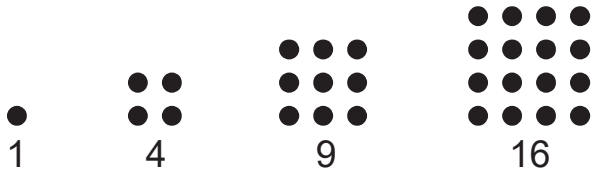
d) $2x - 4 \geq 7x - 34$

e) $2(x + 3) < x - 1$

© Mathswatch Ltd

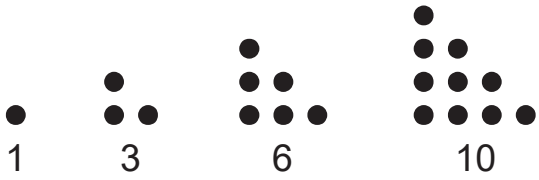
A22 Special Sequences

1) Here is a pattern of square numbers:



What are the next two numbers in the pattern?

2) Here is the pattern of triangular numbers:



What are the next three numbers in the pattern?

3) Here is part of a Fibonacci sequence:

5, 8, 13, 21, 34

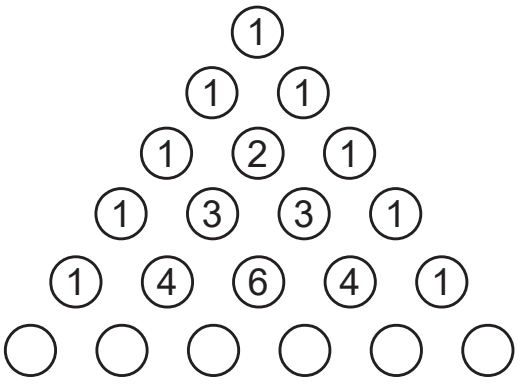
What are the next three numbers in the sequence?

4) Here is part of a number pattern:

3, 4, 6, 9, 13

What are the next three numbers in the pattern?

5) Can you work out a rule and fill in the bottom row?



© Mathswatch Ltd

R9a Increase/Decrease by a Percentage - Basics

1) Describe how you would increase a number by 10%.

2) Describe how you would decrease a number by 10%.

3) Increase the following numbers by 10%

a) 40
b) 140
c) 810
d) 320
e) 75
f) 505
g) 12
h) 123

4) Decrease the following numbers by 10%

a) 20
b) 160
c) 80
d) 190
e) 25
f) 445
g) 13
h) 7

5) Work out the following:

a) Increase £400 by 5%
b) Decrease £120 by 15%
c) Decrease 500 km by 20%
d) Increase 96 kg by 10%
e) Increase 250 m by 50%
f) Decrease £820 by 75%
g) Increase 60 kg by 60%
h) Decrease £26 by 35%

6) A shop is having a sale and all prices are reduced by 25%.

a) Work out the sale price of an item normally priced at £18.40
b) Work out the sale price of an item normally priced at £99

© Mathswatch Ltd

P6 Venn Diagrams

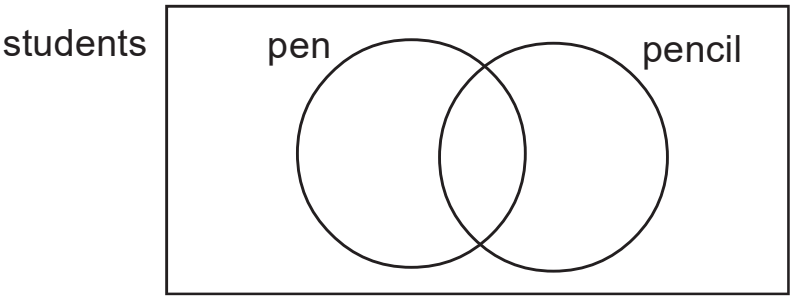
1) In a class of 25 students:

19 have a pen

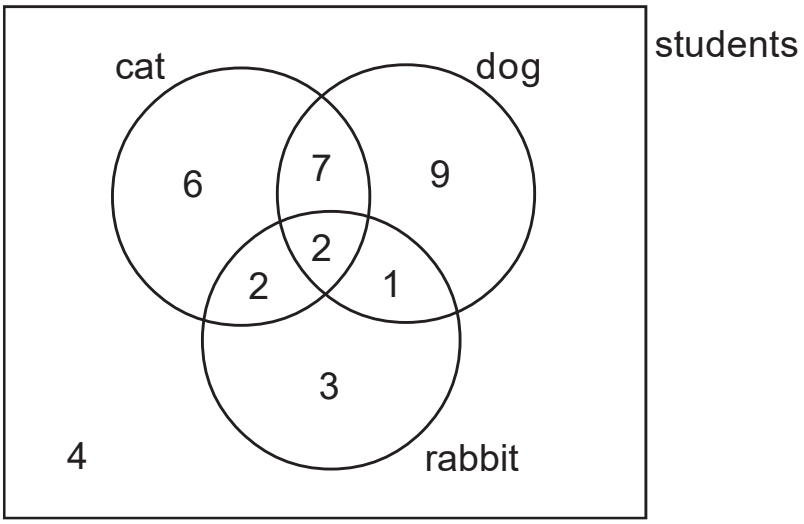
16 have a pencil

3 have neither

Put this information into the Venn diagram.



2) This Venn diagram represents the pets owned by a group of students.



a) How many students have a cat only?

b) How many students have a cat and a rabbit?

c) How many students have either a dog or a cat or both?

d) What is the probability that a student, chosen at random, has a dog only?

e) What is the probability that a student, chosen at random, has a cat, a rabbit and a dog?

f) What is the probability that a student, chosen at random, has a dog or a rabbit or both?

© Mathswatch Ltd