Year 5

N18 Negatives in Real-Life

1) Work out the value of each card and then place the cards in order from lowest to highest.

A

The temperature is -2 °C and then rises by 6.5 °C.

B

1 °C colder than freezing point.

C

The temperature is -6 °C then rises by 8 °C before falling by 5 °C.

D

102 °C cooler than boiling point.

2) Work out the value of each card and then place the cards in order from lowest to highest.

E

You have £5 in the bank but write a cheque for £9.

F

Tim owes you £5.
Sam owes you £3.
You owe Ben £12.
Tom owes you £2.

G

You have £10 in the bank but then write cheques for £6, £2.50, £5 and £1.

H

You owe three people £0.50 each.

I

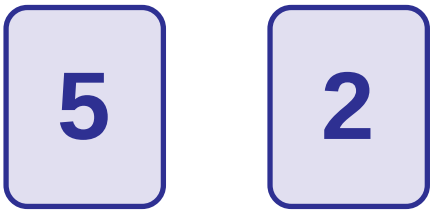
You owe five people £1.25 each but someone owes you £3.50

J

You owe seven people £2 each but six people each owe you £1.50

N18 Negatives in Real-Life

1)



These two cards each have a number on the back as well as on the front.

Eric shuffles the cards quite a few times and lays them on the table.

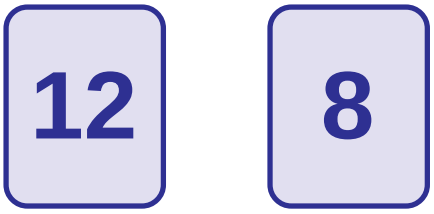
He then adds the numbers he can see.

He discovers there are four different totals.

They are: 3, 5, 7 and 9.

Can you work out what numbers are on the back of each card?

2)

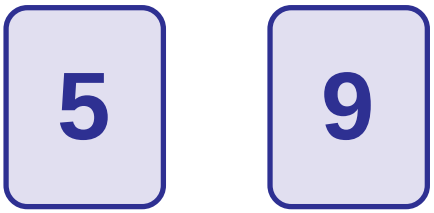


The totals with these cards are:

11, 13, 20 and 22.

Can you work out what numbers are on the back of each card?

3)

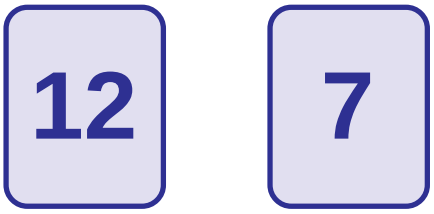


The totals with these cards are:

2, 7, 9 and 14.

Can you work out what numbers are on the back of each card?

4)



The totals with these cards are:

2, 3, 19 and 20.

Can you work out what numbers are on the back of each card?

N19a Directed Numbers Addition and Subtraction

1) The temperature is 3°C at midnight and then falls 8 degrees by 6 a.m.

   What is the temperature at 6 a.m?

2) Tim has only £8 in his bank account but writes a cheque for £15.

   If the cheque is cashed, how much will Tim have in his account?

3) Sue owes £7 to one friend and £6 to another friend.

   She writes this in her diary as (-7) + (-6)

   a) How much does she owe altogether?

   b) What is (-7) + (-6)?

4) Sue still owes £7 to one friend and £6 to another friend but her mother decides to take away the £6 debt by paying it off.

   Sue writes this as (-7) + (-6) – (-6)

   a) How much does Sue owe now?

   b) What is (-7) + (-6) – (-6)?

5) Work out the answers to

   a) 6 – 14

   b) 2 – 12

   c) -1 – 6

   d) -3 – 5

   e) -7 – 15

6) Work out the answers to

   a) 2 – (-3)

   b) 6 – (-5)

   c) -3 – (-6)

   d) -7 – (-2)

   e) -20 – (-18)

7) Work out the answers to

   a) 5 + (-2)

   b) 8 + (-6)

   c) 3 + (-8)

   d) -4 + (-3)

   e) -8 + (-4)

8) Work out the answers to

   a) 4 – (+1)

   b) 7 – (+5)

   c) 1 – (+3)

   d) -6 – (+1)

   e) -1 – (+6)

N19a Directed Numbers Addition and Subtraction

1) Each magic square below has a magic number written above it.

You must fill in the blank squares so that the rows, columns and diagonals add up to the magic number.

a) Magic Number is **12**

	10	
	4	0
	-2	9

b) Magic Number is **15**

2		
15	5	

c) Magic Number is **-27**

		-22
	-9	
		-10

2) Work out which numbers should go in the squares to make the sums correct.

a) $7 + \square = 9$

b) $7 + \square = 5$

c) $2 - \square = -6$

d) $4 - \square = 7$

e) $-5 - \square = 4$

f) $\square + 6 = 4$

g) $\square - 9 = -12$

h) $\square - 14 = -30$

N19b Directed Numbers Multiplication and Division

1) a) $5 \times -7 =$

b) $-3 \times 6 =$

c) $-4 \times -8 =$

d) $2.5 \times -2 =$

e) $-4 \times -1.5 =$

2) a) $3 \times 2 \times -7 =$

b) $-5 \times -4 \times 3 =$

c) $9 \times 2 \times -2 =$

d) $-6 \times -2 \times -3 =$

e) $5 \times -8 \times -1 \times 2 =$

3) a) $8 \div -2 =$

b) $-16 \div 4 =$

c) $-20 \div -5 =$

d) $32 \div -8 =$

e) $-13 \div -2 =$

4) a) $-9 \times 7 \times 2 =$

b) $18 \div -4 =$

c) $-1 \times 2 \times -3 \times 4 \times -5 =$

d) $(24 \div -4) \times -5 =$

e) $(-50 \div 5) \times -2 =$

N20 BODMAS

1) Work out the following:

a) $3 \times 6 - 2$

b) $7 + 2 \times 3$

c) $5 + 3 \times 4 - 1$

d) $(7 + 1) \times 3$

e) $5 - 3 \times 2$

f) $9 - 35 \div 5$

g) $3 \times 2 + 7 + 5 \times 4$

h) $20 - 9 \div 3 + 1$

i) $2 \times (15 - 10) \div 5$

j) $7 + 2 - 3 \times 4$

k) $10 \div (2 + 3)$

l) $10 \div 5 - 8 \div 2$

m) $7 \times (5 - 2) + 10$

n) $48 \div (2 + 3 \times 2)$

o) $4 \times 12 \div 8 - 6$

2) Work out the following:

a) $3^2 - 2^3$

b) $25 - (3 - 1)^2$

c) $8 \times 7 - \sqrt{16}$

d) $36 \div 2^2 - 3 \times 3$

e) $5^3 - (3 \times 15 - 2^5)$

f) $((9 + 1) \times 4) \div 2$

3) Place brackets in the following questions to make the answers correct.

a) $3 \times 5 - 1 = 12$

b) $10 + 2 \times 3 = 36$

c) $7 \times 5 - 2 \times 2 = 42$

d) $24 \div 6 - 2 = 6$

e) $3 + 2 \times 6 \div 10 = 3$

f) $5 \times 5 - 3 \div 4 + 1 = 2$

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4) If $x = 3$ and $y = 7$, work out the following:

a) $2x - y$

b) $3y + x^2$

c) $y^2 - x^2$

d) $(x + y)^2 - x^3$

e) $5(y - x) + (y + x) \div 2$

f) $10xy - (2y - x)^2$

N20 BODMAS

1) Use the numbers 6, 3, 2 and 1 plus the operations +, –, ×, ÷ to make the numbers 0 to 9.

The numbers must be used in the specified order (6, 3, 2, 1).

They cannot be put together as in 63 for example.

Signs can be used as many times as you like. Brackets can also be used.

0 = **6 3 2 1**	5 = **6 3 2 1**
1 = **6 3 2 1**	6 = **6 3 2 1**
2 = **6 3 2 1**	7 = **6 3 2 1**
3 = **6 3 2 1**	8 = **6 3 2 1**
4 = **6 3 2 1**	9 = **6 3 2 1**

2) Use four 4s plus the operations +, –, ×, ÷ to make the numbers 0 to 9.

All four 4s must be used. 4s cannot be put together as in 44.

Signs can be used as many times as you like. Brackets can be used.

A possible answer for 0 could be ***4 ÷ 4 – 4 ÷ 4***

0 =	5 =
1 =	6 =
2 =	7 =
3 =	8 =
4 =	9 =

N21a Real-Life Tables Distance Tables

1)

London			
195	Nottingham		
300	100	Manchester	
330	159	56	Liverpool

All distances are in miles.

a) Write down the distance between London and Nottingham.

b) Write down the names of the two cities which are
(i) The furthest apart.
(ii) The least distance apart.

c) Peter travels from London to Manchester where he collects a parcel.
He then delivers the Parcel in Nottingham before returning to London.
Work out the total distance travelled by Peter.

2)

London				
22	Stevenage			
75	48	Peterborough		
195	165	130	Doncaster	
235	210	170	45	York

All distances are in miles.

Emma lives in Doncaster.
She has to drive to Peterborough to pick up her friend, David, and then continue on to London to attend a graduation ceremony which begins at 11 am.
The ceremony will last two hours and she will then return to Doncaster with David.

a) How far does Emma travel in order to get to London with David?

b) If Emma averages 50 mph on the return trip, at what time would she be back in Doncaster?

N21b Real-Life Tables Timetables

1) Here is part of a railway timetable

Stockport	05:26	06:16	06:55	07:15	07:55
Stoke	05:55	06:45	07:24	-	-
Stafford	06:12	-	07:41	-	08:41
Euston	08:09	08:26	-	09:11	10:06

a) Rosie wants to travel from Stockport to Euston. She must arrive in Euston before 09:00.

(i) What is the latest time she could depart from Stockport?

(ii) How long will her journey last?

b) James gets to Stockport station at 07:00.
How long will he have to wait for the next train to Stafford?

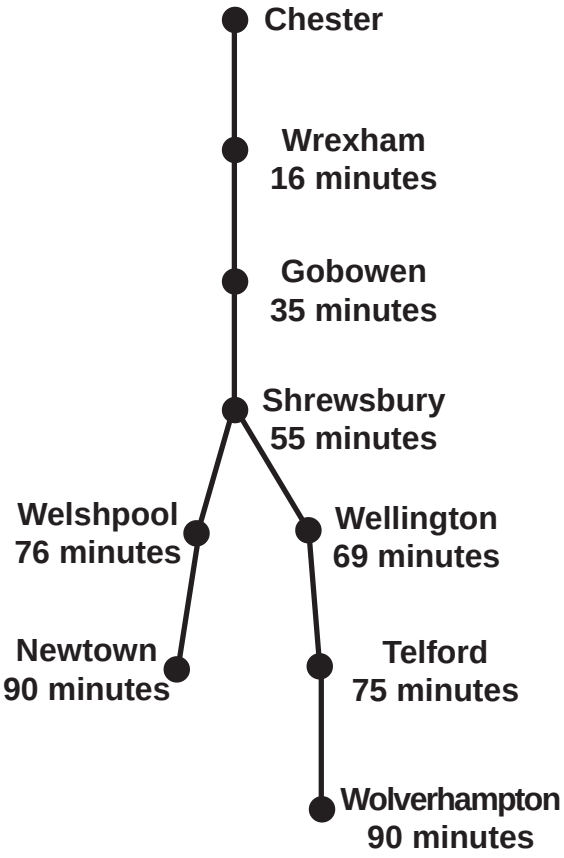
c) Alex travels to Euston.
She gets on the 07:24 train from Stoke.
How long will her journey take?

2) The train route diagram show the times it takes to travel from Chester to other major stations on the line.

Use the information in the diagram to complete the following timetables.

Chester	04:22
Wrexham	
Gobowen	
Shrewsbury	
Welshpool	
Newtown	

Wolverhampton	16:42
Telford	
Wellington	
Shrewsbury	
Gobowen	
Wrexham	
Chester	



N22a Real-Life Problems Without a Calculator

1) Which four coins make a total of 77p?

2) Six bars of metal each weigh 2.75 kg.
How much do they weigh altogether?

3) At a party for 171 people, 9 guests sat at each table.
How many tables were there?

4) Coke cans cost 43p each.
How many cans you buy with £6?

5) Olivia went to a cafe.
She ordered:

2 sausages
Baked beans
3 coffee
1 juice

She paid with a £5 note.
Work out how much change she got.

N22a Real-Life Problems Without a Calculator

1) Cheese is on offer at £3.26 per kilogram.
Emma buys half a kilogram.

How much change does she receive from a £10 note?

2) A mug and a plate together cost £2.90.
The mug cost 40p more than the plate.

How much does the plate cost?

3) A man is 27 cm taller than his son, who is 8 cm shorter than his mother. The man was born 42 years ago and is 1.78 m tall.

How tall is his wife?

4) A bus starts at Birmingham and makes three stops before reaching London.

At Birmingham, 37 people get on.
At Rugby, 13 people get off and 6 get on.
At Willen, 9 people get off and 15 get on.
At Luton, 24 people get off and 8 get on.

How many people are on the bus when it reaches London?

N22b Real-Life Problems With a Calculator

1) There are 7 people in a team.
How many teams can you make from 131 people?

2) A motorist bought 26 litres of petrol at £1.19 per litre.
   a) How much did it cost?
   b) What change did he get from £50?

3) A museum trip is organised for 57 members of a youth club. They go in minibuses that can each seat up to 15 people.
It costs £42.50 for each minibus and £172 for the group to access the museum.
How much will the trip cost per person?

4) Mars Bars cost 35p. Skittles cost 45p.
Gillian bought 5 bags of Skittles and some Mars Bars.
She paid with a £5 note and received 30p change.
How many Mars Bars did she buy?

N22b Real-Life Problems With a Calculator

1) Three consecutive integers have a sum of 105.
What are they? ____ ____ ____

2) Using the brackets keys of your calculator,

work out the following.

a) 164 – (27 + 56) = _____

b) 44.8 ÷ (15.4 – 9.8) = _____

c) (19.8 – 3.3) ÷ (31.2 – 16.2) = _____

d) (8 × 14.4) ÷ (11.1 – 4.7) = _____

3) If you start with 16 and press the square root key of your calculator ($\sqrt{\ }$) twice, the answer given is 2.

If you start with 81 and press the square root key of your calculator ($\sqrt{\ }$) twice, the answer given is 3.

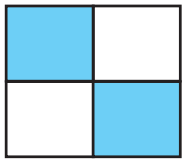
Complete the following sentences:

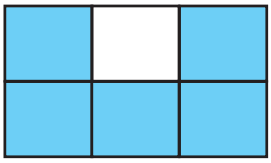
a) If you start with 1296 and press the square root key of your calculator twice,the answer given is _____ .

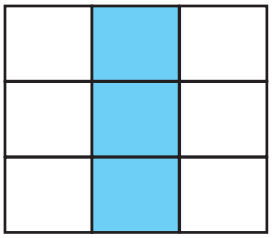
b) If you start with _____ and press the square root key of your calculator twice, the answer given is 5 .

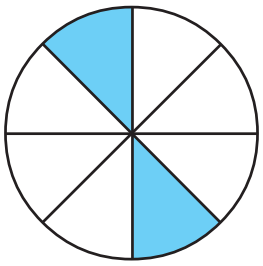
N23a Introduction to Fractions Shading

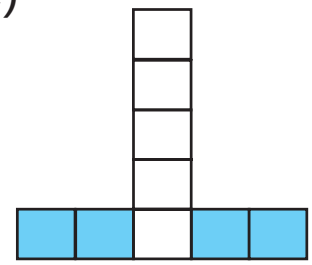
1) What fractions of the following shapes are shaded?

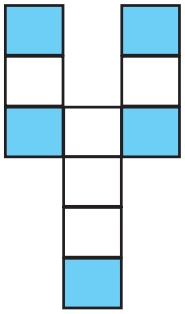
a) 

b) 

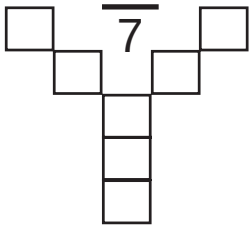
c) 

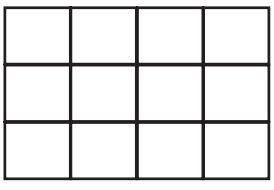
d) 

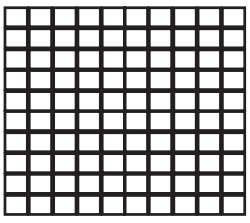
e) 

f) 

2) Shade the shapes according to the given fractions.

a) $\frac{5}{7}$ 

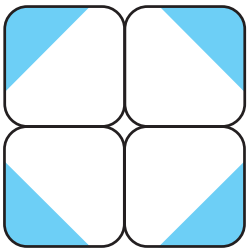
b) $\frac{1}{3}$ 

c) $\frac{25}{100}$ 

N23a Introduction to Fractions Shading

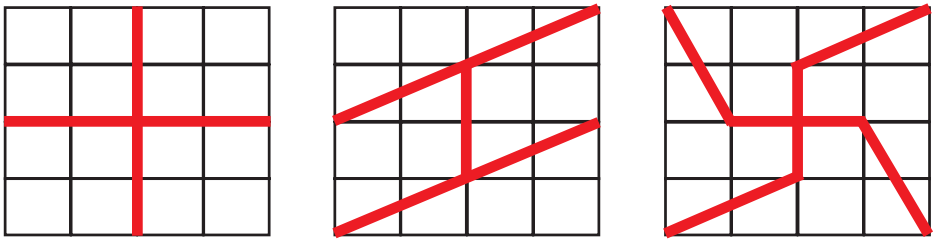
1) $\frac{1}{3}$ of this shape is shaded.

a) What fraction of this diagram is shaded?

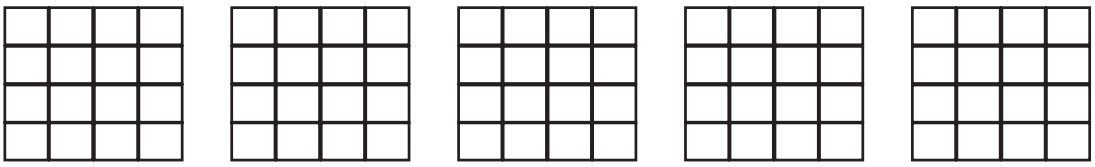


b) What fraction of this diagram is shaded?

2) These rectangles have been split into four equal pieces.



Split each of these rectangles into four equal pieces in different ways.



N23b Introduction to Fractions Equivalent Fractions

1) Find three equivalent fractions to each of the following:

a) $\frac{1}{3}$ b) $\frac{1}{4}$ c) $\frac{1}{5}$

d) $\frac{2}{5}$ e) $\frac{3}{4}$ f) $\frac{5}{8}$

2) Fill in the missing number in each of these equivalent fractions.

a) $\frac{2}{3} = \frac{\square}{9}$ b) $\frac{1}{5} = \frac{\square}{20}$ c) $\frac{3}{11} = \frac{\square}{22}$

d) $\frac{1}{3} = \frac{5}{\square}$ e) $\frac{2}{7} = \frac{10}{\square}$ f) $\frac{4}{9} = \frac{8}{\square}$

g) $\frac{2}{5} = \frac{\square}{50}$ h) $\frac{5}{7} = \frac{\square}{42}$ i) $\frac{9}{10} = \frac{81}{\square}$

3) Complete the following equivalent fraction series.

a) $\frac{1}{2} = \frac{2}{\square} = \frac{\square}{6} = \frac{5}{\square} = \frac{\square}{20} = \frac{50}{\square}$

b) $\frac{3}{5} = \frac{6}{\square} = \frac{\square}{15} = \frac{12}{\square} = \frac{\square}{50} = \frac{300}{\square}$

N23b Introduction to Fractions Equivalent Fractions

1) Here are six number cards.

2	4	6	8	10	12

a) Choose two of these six cards to make a fraction that is equivalent to $\frac{1}{6}$.

$\frac{\square}{\square}$

b) Choose two of these six cards to make a fraction that is equivalent to $\frac{12}{16}$.

$\frac{\square}{\square}$

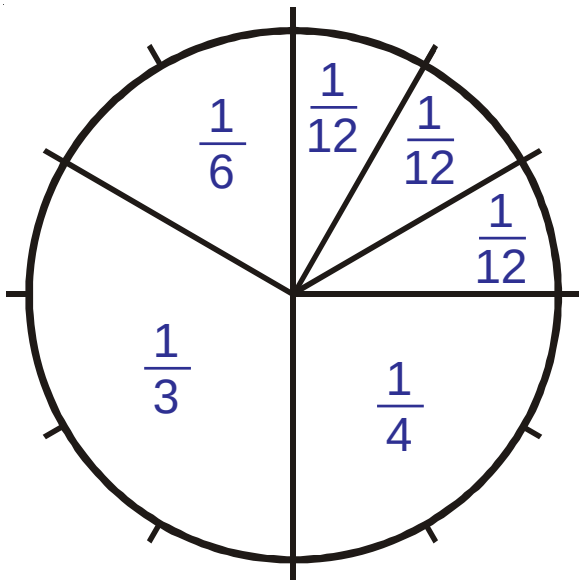
2) Use the diagram below to help you fill in the missing numbers.

a) $\frac{1}{3} = \frac{1}{4} + \frac{\square}{\square}$

b) $\frac{1}{6} = \frac{\square}{\square} - \frac{1}{12}$

c) $\frac{1}{6} + \frac{2}{12} = \frac{\square}{\square}$

d) $\frac{1}{3} + \frac{1}{6} = \frac{1}{4} + \frac{\square}{\square}$



N23c Introduction to Fractions Simplifying

1) Cancel each of these fractions to their simplest form:

a) $\frac{2}{6}$ b) $\frac{5}{10}$ c) $\frac{3}{12}$

d) $\frac{2}{16}$ e) $\frac{9}{27}$ f) $\frac{20}{80}$

2) Cancel each of these fractions to their simplest form:

a) $\frac{4}{14}$ b) $\frac{30}{70}$ c) $\frac{16}{34}$

d) $\frac{24}{42}$ e) $\frac{27}{45}$ f) $\frac{28}{36}$

3) Cancel down fully each of these fractions:

a) $\frac{33}{55}$ b) $\frac{72}{96}$ c) $\frac{45}{90}$

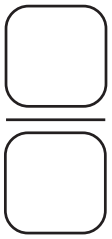
d) $\frac{75}{100}$ e) $\frac{40}{180}$ f) $\frac{68}{116}$

N23c Introduction to Fractions Simplifying

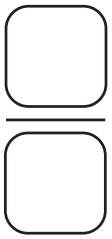
Here are six number cards.

2	5	9	7	4	11

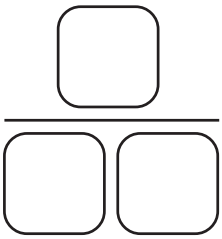
a) Choose two of these six cards to make a fraction that is equal to $\frac{45}{99}$.



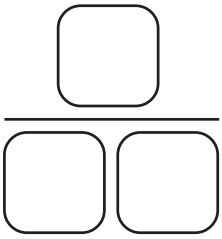
b) Choose two of these six cards to make a fraction that is equal to $\frac{112}{144}$.



c) Choose three of these six cards to make a fraction that is equal to $\frac{28}{175}$.

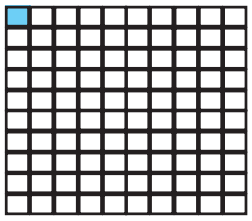


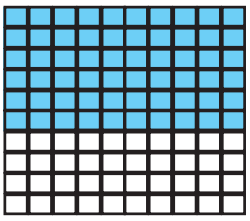
d) Choose three of these six cards to make the smallest possible fraction.

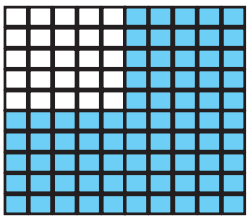


N24a Percentages Introduction

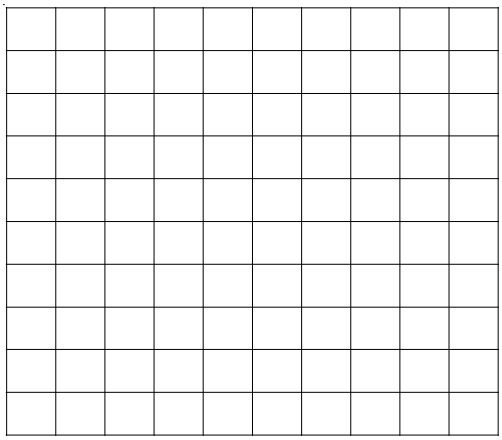
1) What percentage of the shapes below are shaded?

a) 

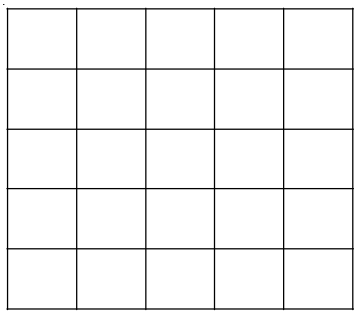
b) 

c) 

2) Shade in 45% of this grid.



3) Shade in 32% of this grid.



N24b Percentages
Percentage of an Amount

1) Work out the following:

a) 50% of 80

b) 50% of 48

c) 50% of 15

d) 25% of 120

e) 25% of 90

2) Work out the following:

a) 10% of 150

b) 10% of 26

c) 50% of 12

d) 25% of 12

e) 75% of 12

3) Work out the following:

a) 10% of £40

b) 5% of £40

c) 15% of £40

d) 5% of £70

e) 15% of £380

4) Work out the following:

a) 20% of £50

b) 45% of £9

c) 80% of £11

d) 35% of £6

e) 65% of £824

5) Jamie received £26 pocket money last week.

He spent it as follows: __ 10% on sweets,

__ 25% on magazines

__ 15% on games

How much did Jamie have left?
Show your working.

6) Tony had £40 saved up and gave 35% of it to his younger sister, Ella.

Ella gave 20% of what she was given to her younger brother, Ben.

Ben gave 30% of what he was given to his younger brother, Tim.

Tim spent 75% of what he was given on buying a toy for his hamster, Hammy.

How much was the toy for Hammy?

N25 Powers and Roots

1) a) Shade all the square numbers in the grid.

b) Put a circle round all the cube numbers in the grid.

1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80	81	82	83	84
85	86	87	88	89	90	91	92	93	94	95	96
97	98	99	100	101	102	103	104	105	106	107	108
109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132
133	134	135	136	137	138	139	140	141	142	143	144

2) a) What is the square root of 169?

b) What is the cube root of 64?

3) Add together the square root of 81 with the cube root of 216.
Now, square the result.
What is your final answer?

N26 Function Machines and Inverse Operations

1) Find the **output** for each of these function machines.

a) 3 → × 5 →

b) 7 → + 5 →

c) 6 → × 2 → – 3

d) 13 → + 5 → ÷ 3

e) 10 → ÷ 2 → – 7

f) 7 → – 4 → × 2.5

2) Find the **input** for each of these function machines.

a) → – 5 → 8

b) → ÷ 4 → 25

c) → × 2 → – 1 → 19

d) → ÷ 5 → + 8 → 18

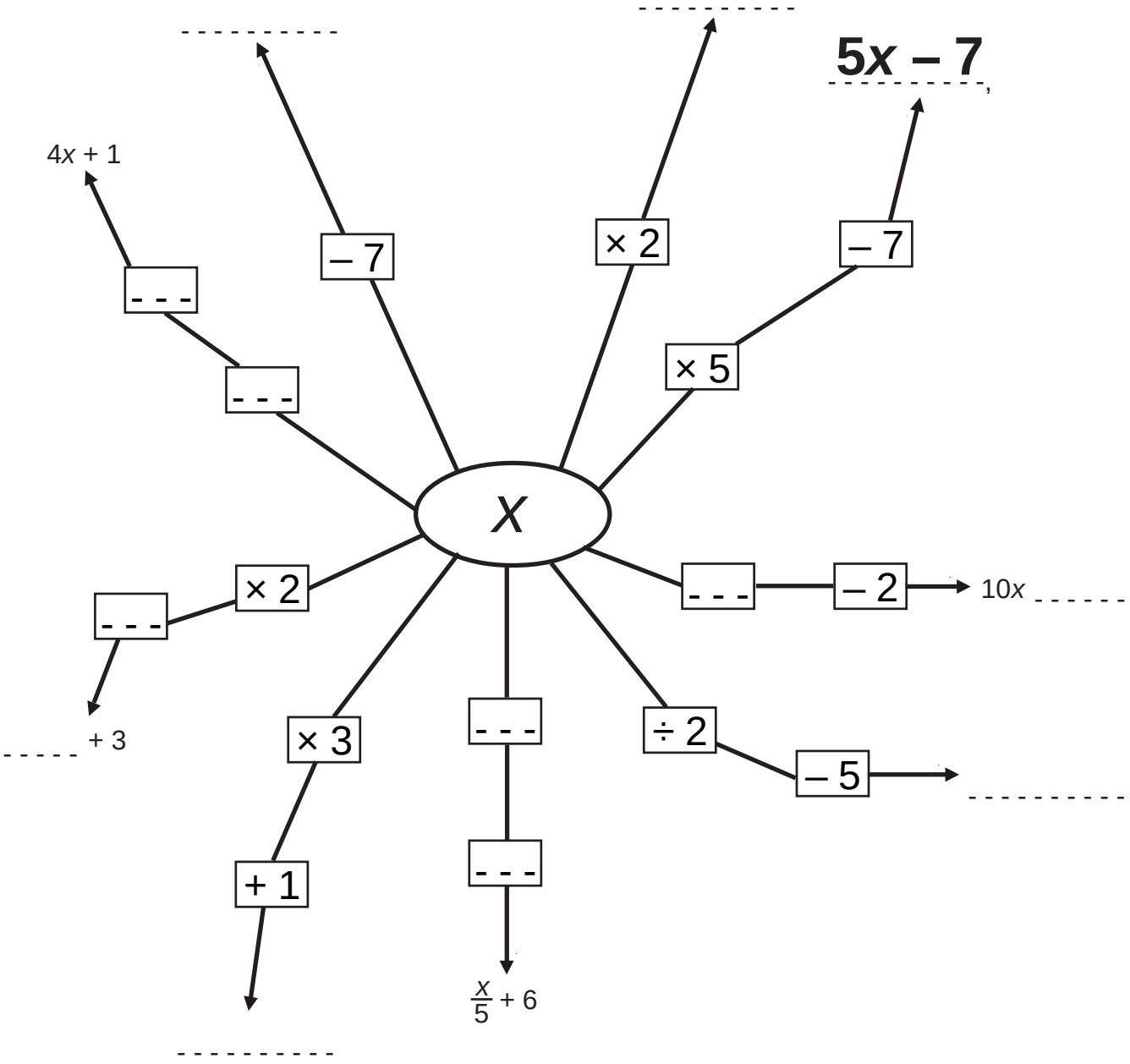
e) → – 7 → ÷ 2 → 3.5

f) → × 19 → – 4 → -4

N26 Function Machines and Inverse Operations

Complete the diagram below. Every time you see dashes like this - - - - - - - - - - , you need to write the correct number or expression.

One of them (**5*x* – 7**) has already been done for you.



N27a Rounding
Nearest 10, 100, 1000

Using a calculator, work out the following.
Give your answers to the nearest 10.

a) 24 × 14

b) 383 × 43

c) 4088 ÷ 56

d) 265364 ÷ 326

e) (42000 + 768) ÷ 54

N27b Rounding Decimal Places

Round the following numbers to 1 decimal place.

a) 4.21

b) 53.43

c) 31.59

d) 8.827

e) 0.653

f) 578.48

g) 79.035

h) 3443.77052

i) 26.9999

j) 99.961

N27b Rounding Decimal Places

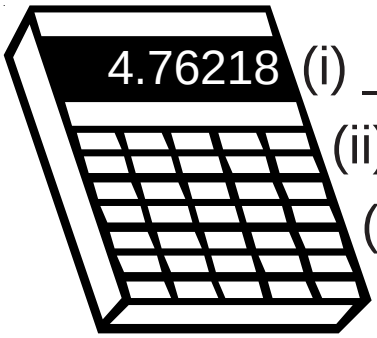
Round each of the numbers on the calculators to

(i) 1 d.p.

(ii) 2 d.p.

(iii) the nearest whole number.

1)

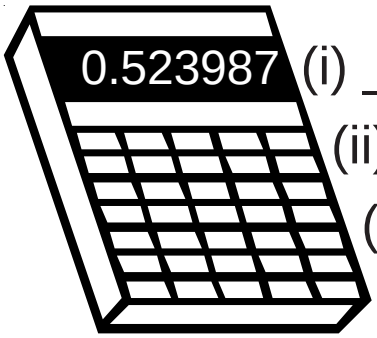


(i) ____

(ii) ____

(iii) ____

2)

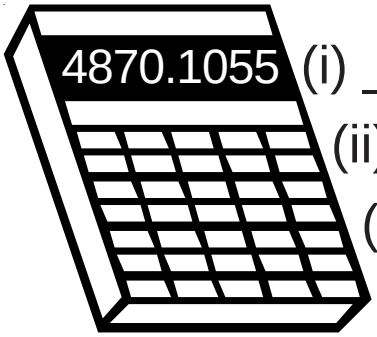


(i) ____

(ii) ____

(iii) ____

3)

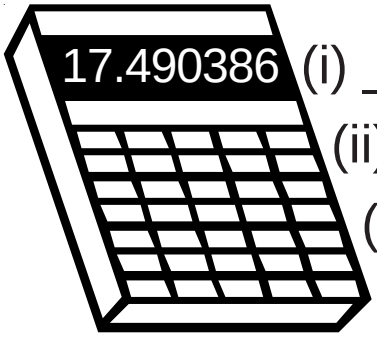


(i) ____

(ii) ____

(iii) ____

4)

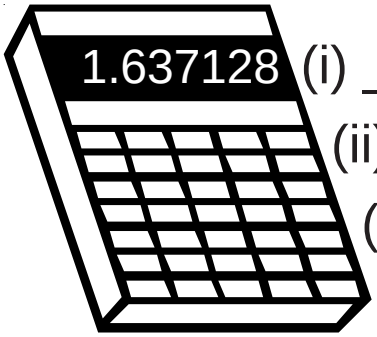


(i) ____

(ii) ____

(iii) ____

5)

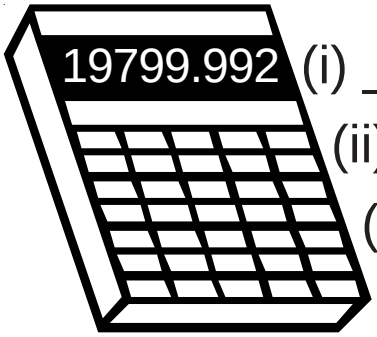


(i) ____

(ii) ____

(iii) ____

6)



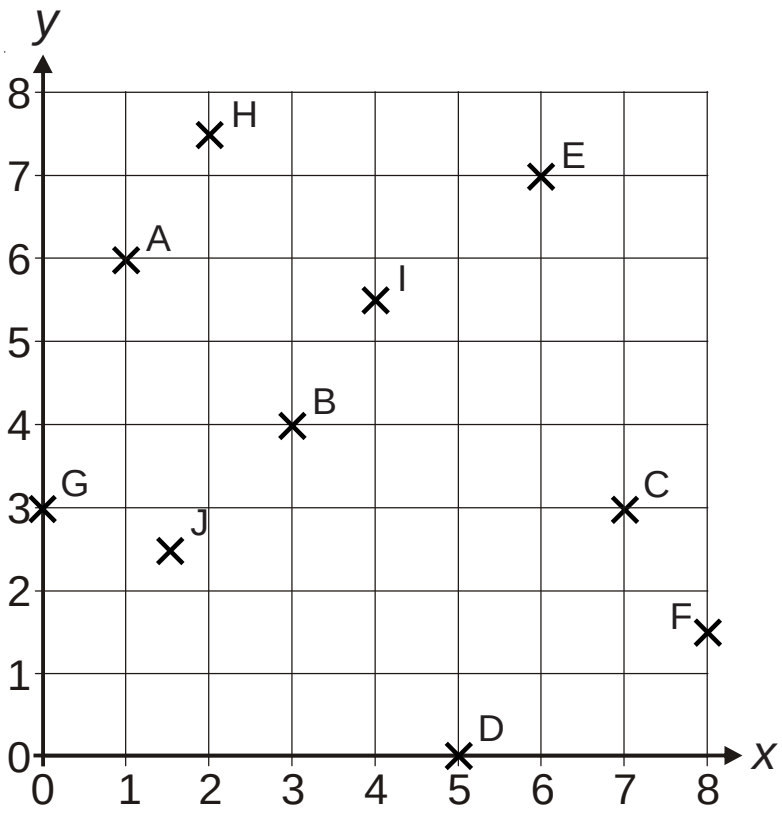
(i) ____

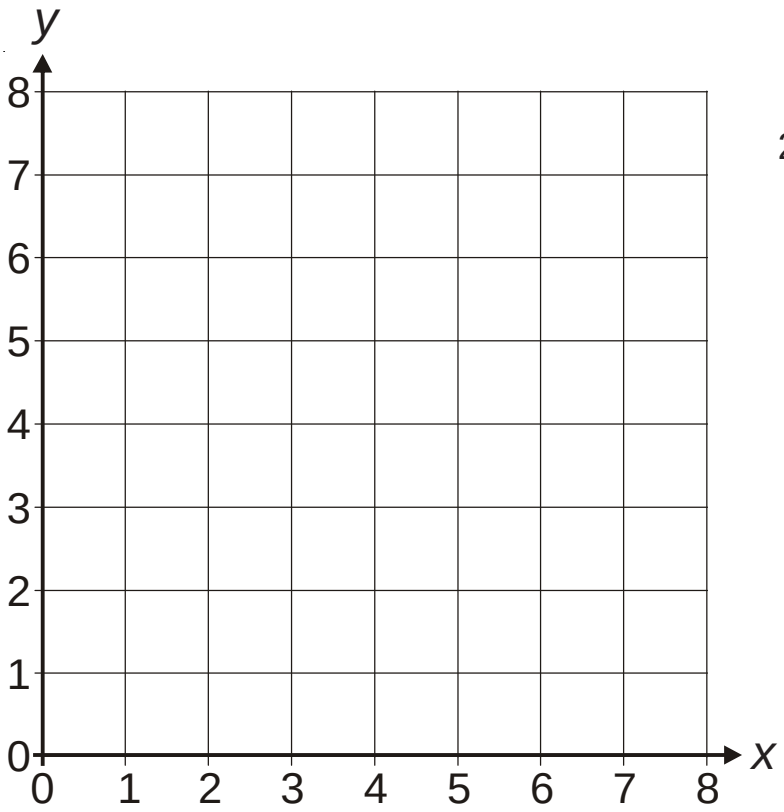
(ii) ____

(iii) ____

A1a Coordinates - First Quadrant

1) Write down the coordinates of the crosses labelled A to J.





2) Put crosses at the following points and label them with the correct letters.

A (3, 7)

B (8, 4)

C (2, 5)

D (6, 0)

E (2.5, 3)

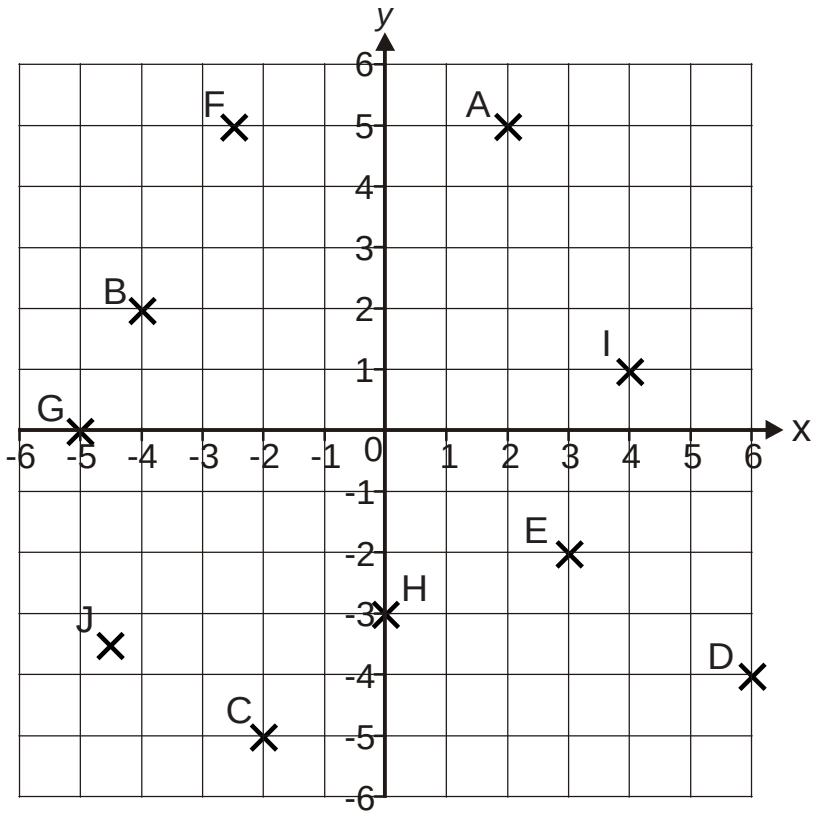
F (0, 6.5)

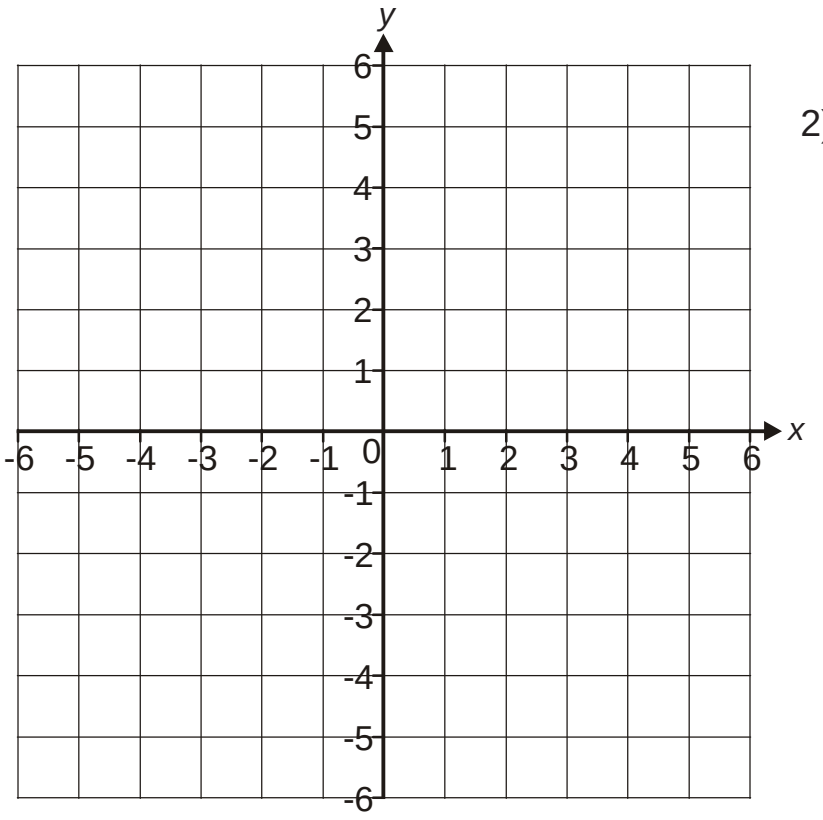
G (5.5, 7.5)

H (8, 8)

A1b Coordinates - All 4 Quadrants

1) Write down the coordinates of the crosses labelled A to J.





2) Put crosses at the following points and label them with the correct letters.

A (-5, 3)

B (2, -4)

C (-2, -6)

D (5.5, 3)

E (0, 0)

F (-3, 0)

G (-6, -5)

H (0, -5)

A1b Coordinates - All 4 Quadrants

1) Below there are seven well-known phrases or expressions.
Expression (a) is “Clean underwear”.
Try and work out the other six.

(a)

WEAR
CLEAN

(b)

POTOOOOOOOO

(c)

DR doo

(d)

HOROBOD

(e)

O _ E R _ T _ O _

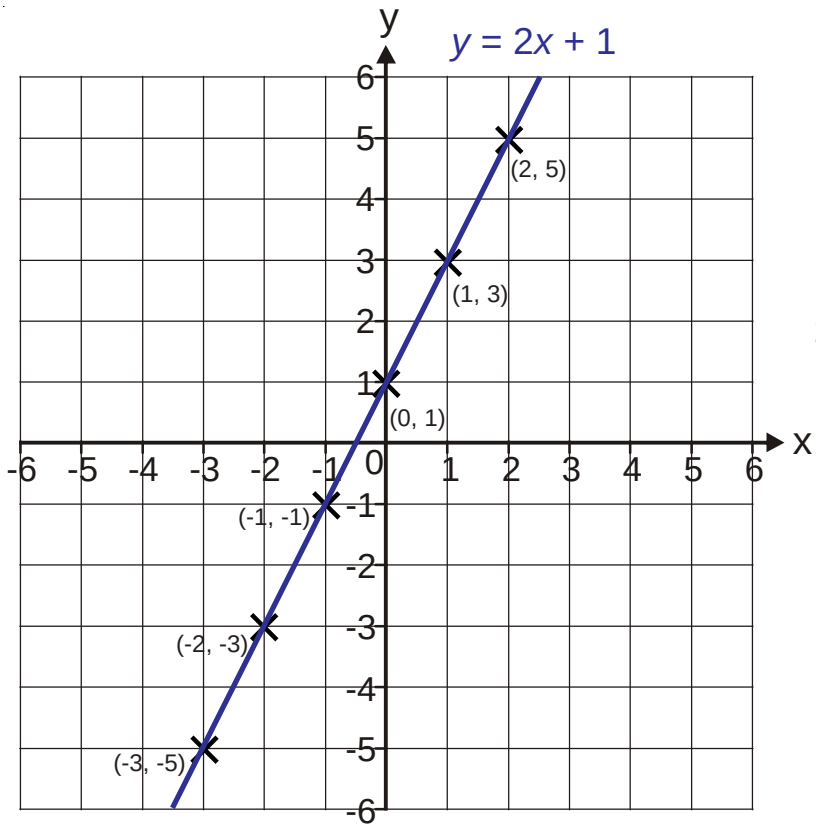
(f)

XMASCARA

(g)

must get here
must get here
must get here

Every question on this page can be answered if you just see them in the right way.



For every point on the line if you multiply the x coordinate by 2 and then add 1 you always get the y coordinate.
This is why we call the line $y = 2x + 1$

2) Plot the following points on the grid, draw a line through the points and try and work out the name of the line.

a) (6, 6), (5, 5), (4, 4), (3, 3), (2, 2)
(1, 1), (0, 0), (-1, -1), (-2, -2)
(-3, -3), (-4, -4), (-5, -5), (-6, -6)

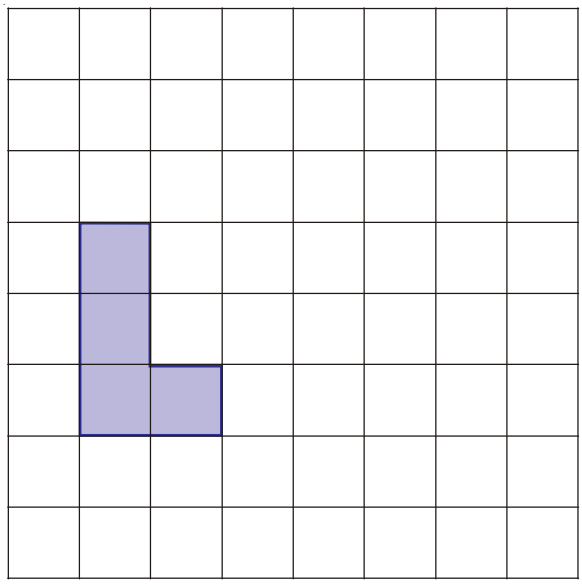
b) (6, 3), (4, 2), (2, 1), (0, 0), (-6, -3)

c) (4, 5), (3, 3), (2, 1), (1, -1), (-1, -5)

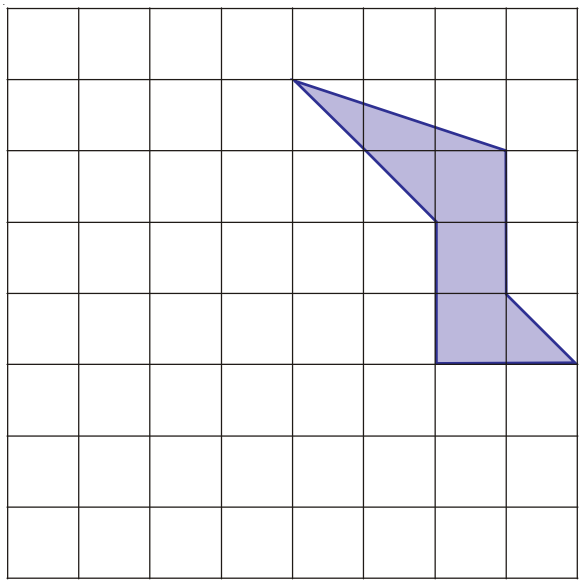
d) (5, 6), (5, 5), (5, 4), (5, 3), (5, 2)
(5, 1), (5, 0), (5, -1), (5, -2), (5, -6)

G5 Translation

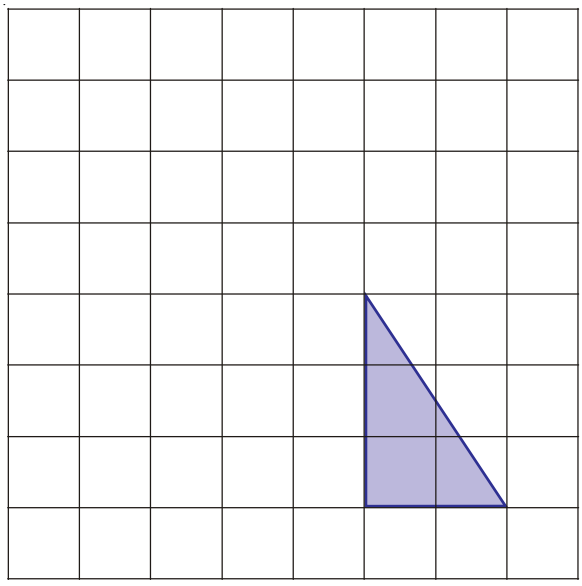
1) Translate the shape 5 squares to the right and 2 squares up.



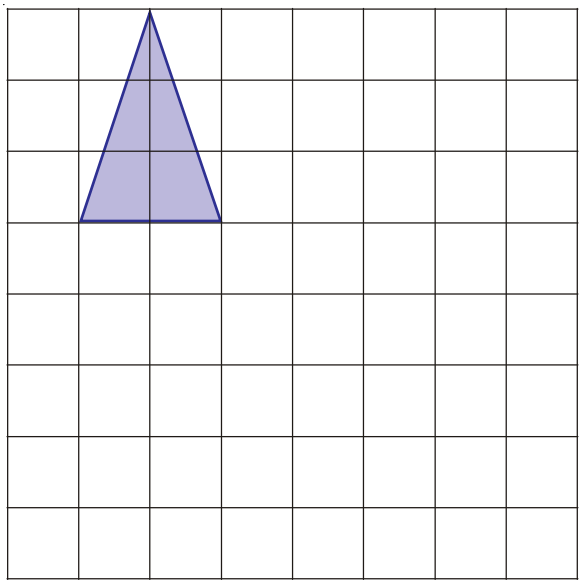
2) Translate the shape 3 squares to the left and 2 squares down.



3) Translate the shape with vector $\begin{pmatrix} -4 \\ 3 \end{pmatrix}$



4) Translate the shape with vector $\begin{pmatrix} 4 \\ -5 \end{pmatrix}$



G5 Translation

Use tracing paper and translate the following shapes.

A with vector $\begin{pmatrix} -3 \\ -2 \end{pmatrix}$

B with vector $\begin{pmatrix} 2 \\ 3 \end{pmatrix}$

C with vector $\begin{pmatrix} 1 \\ -4 \end{pmatrix}$

D with vector $\begin{pmatrix} 2 \\ 0 \end{pmatrix}$

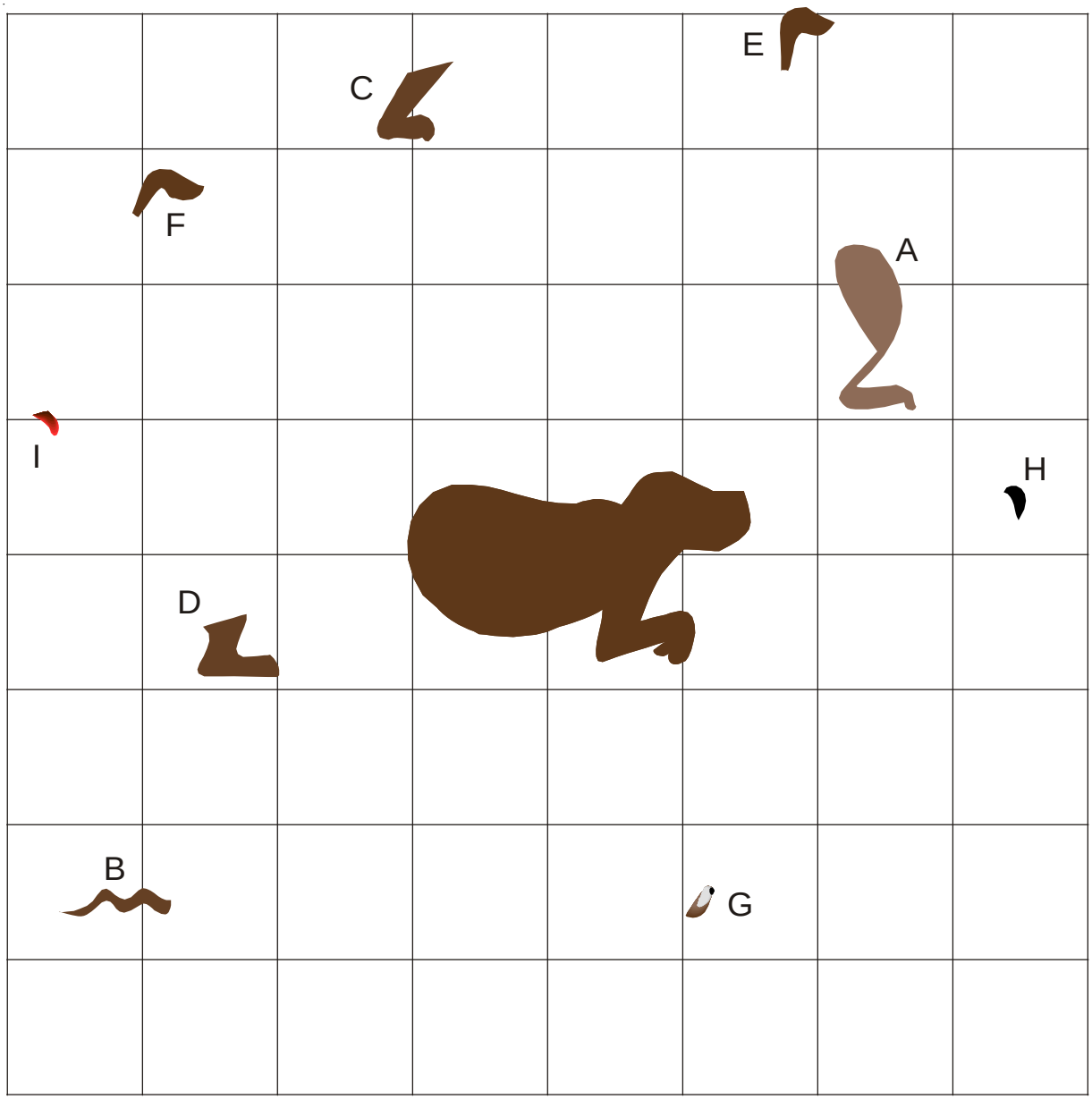
E with vector $\begin{pmatrix} -1 \\ -3 \end{pmatrix}$

F with vector $\begin{pmatrix} 4 \\ -2 \end{pmatrix}$

G with vector $\begin{pmatrix} 0 \\ 3 \end{pmatrix}$

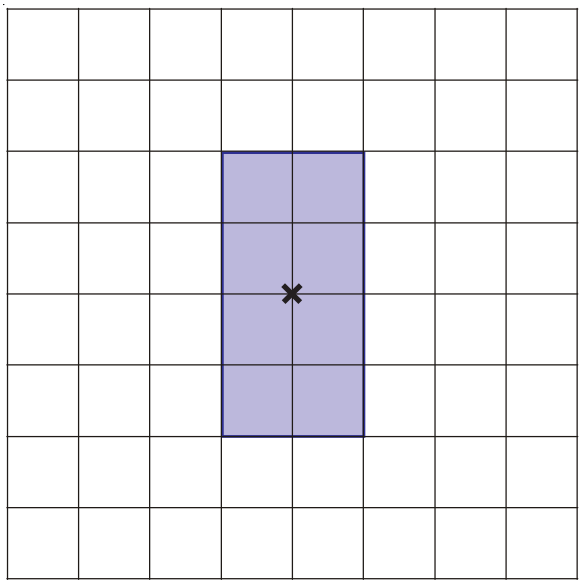
H with vector $\begin{pmatrix} -2 \\ 0 \end{pmatrix}$

I with vector $\begin{pmatrix} 5 \\ -1 \end{pmatrix}$

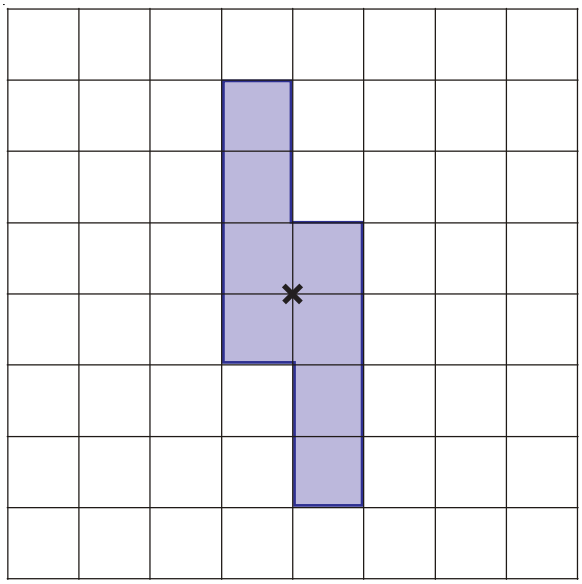


G6 Rotation

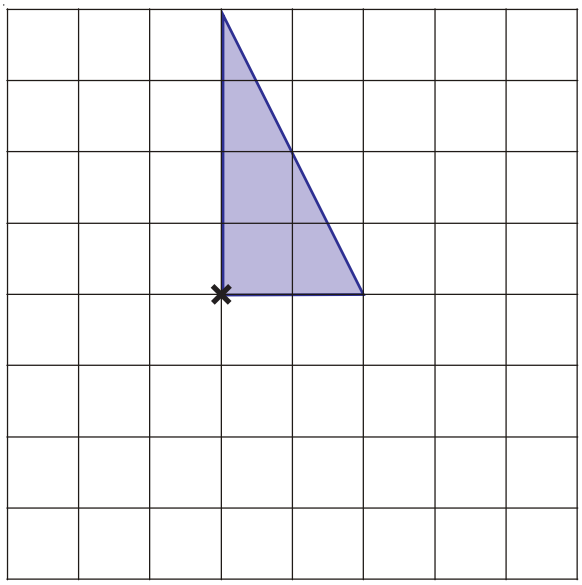
1) Rotate the shape 90° about the cross.



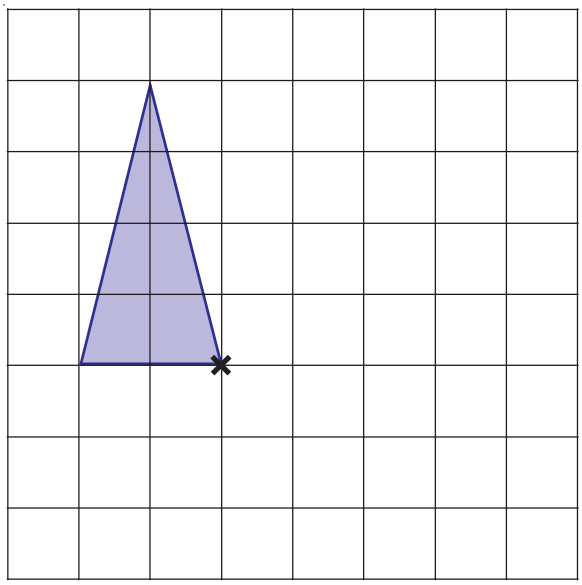
2) Rotate the shape 90° about the cross.



3) Rotate the shape 180° about the cross.



4) Rotate the shape 90° clockwise about the cross.



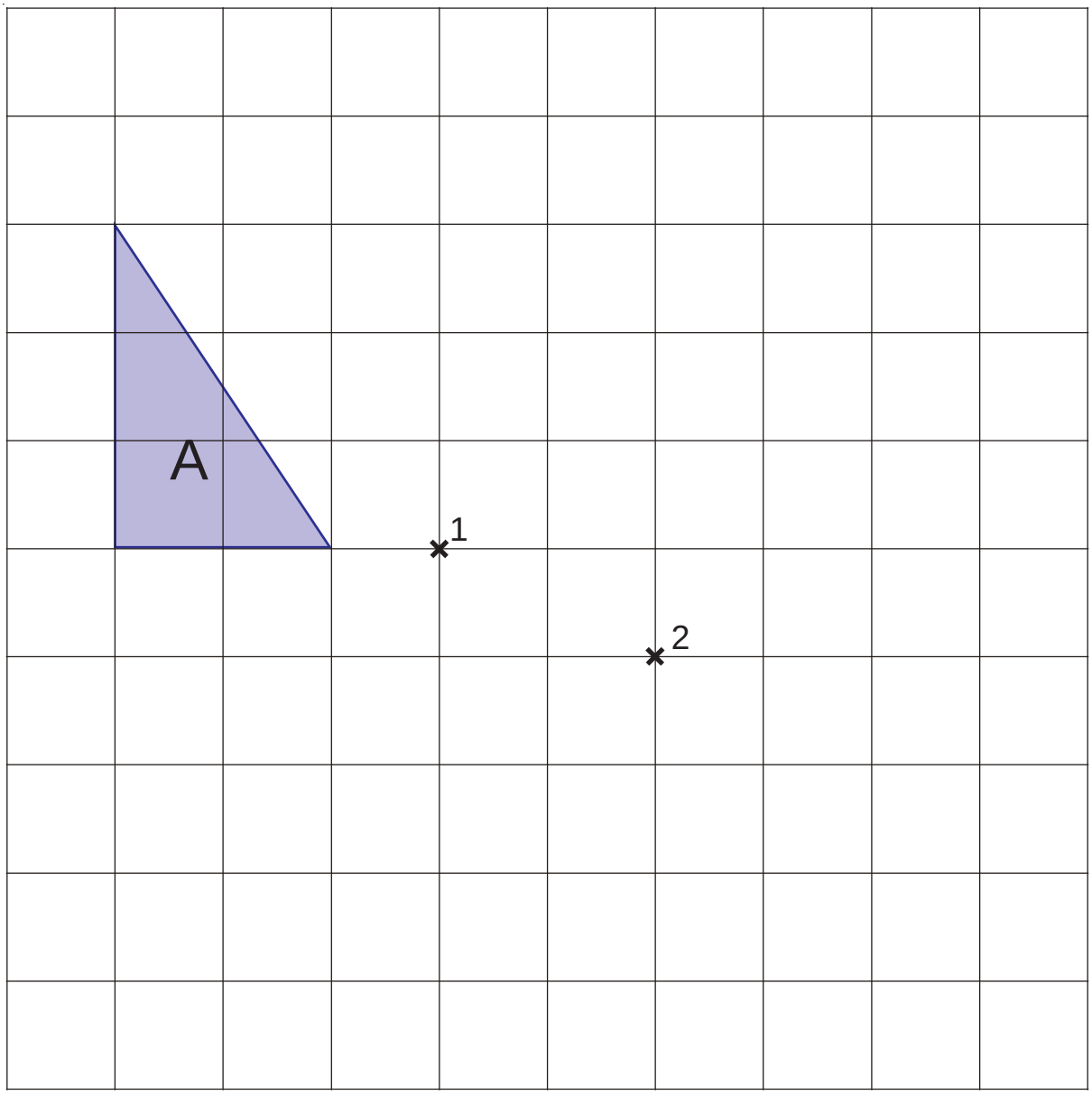
G6 Rotation

a) Rotate triangle A 90° clockwise about cross 1.
Label your new triangle B.

b) Rotate triangle B 90° clockwise about cross 2.
Label your new triangle C.

c) How many degrees would you need to rotate triangle A to get to triangle C?

d) Mark with a cross the centre of rotation to get from A to C.



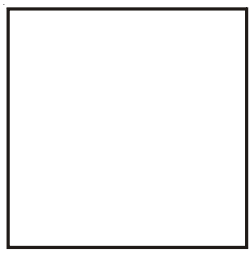
G7 Rotational Symmetry

1) *For figures a to h, work out*

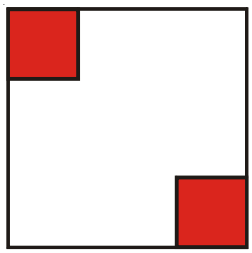
i) The order of rotational symmetry.

ii) How many lines of symmetry it has.

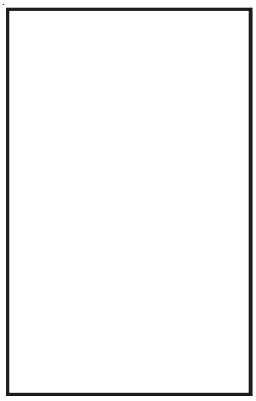
a)



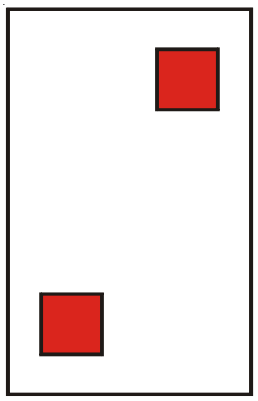
b)



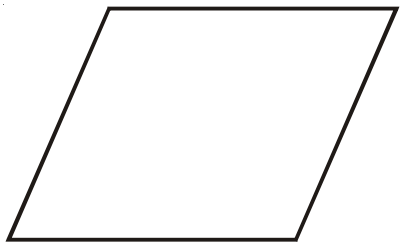
c)



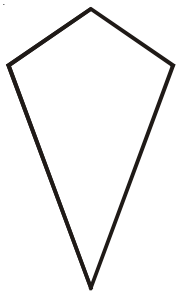
d)



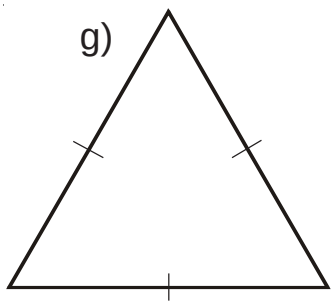
e)



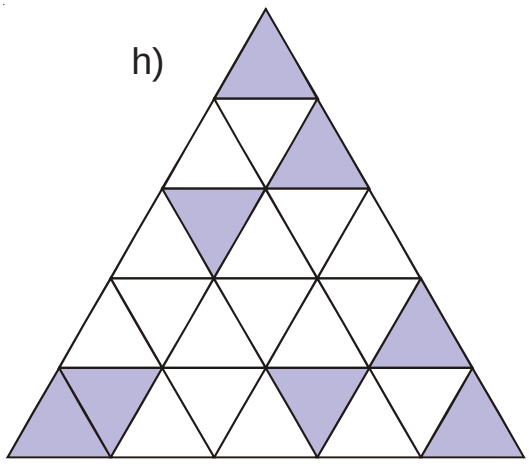
f)



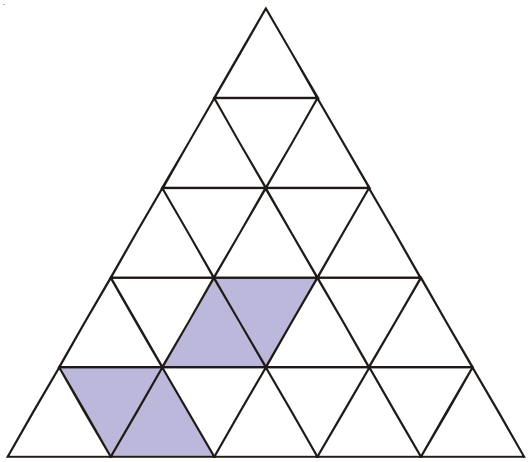
g)



h)

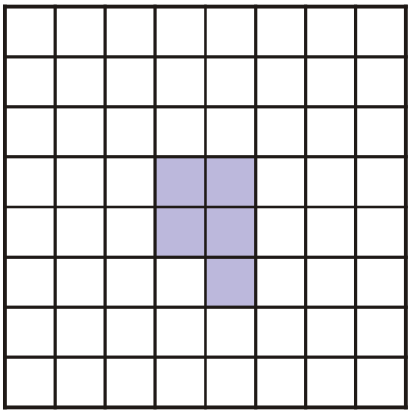


2) Shade in six more triangles so that this figure has rotational symmetry order 3

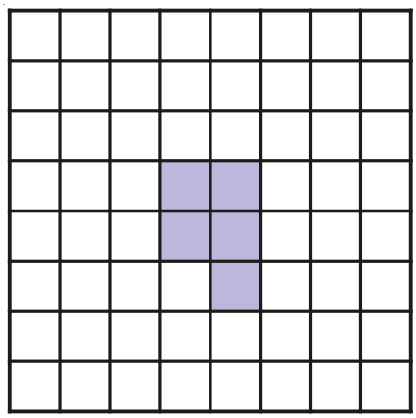


G7 Rotational Symmetry

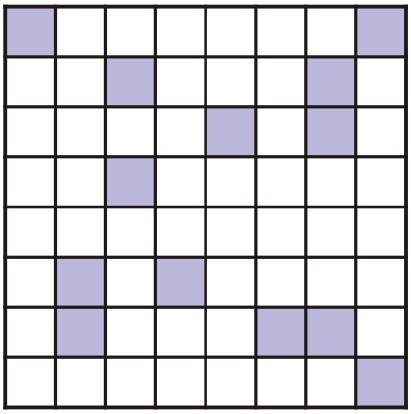
1) a) Shade in one square so that this shape has rotational symmetry of order 2.



b) Shade in a different square so that this shape has rotational symmetry of order 2.



2) Shade three more squares so that the grid has rotational symmetry of order 4.



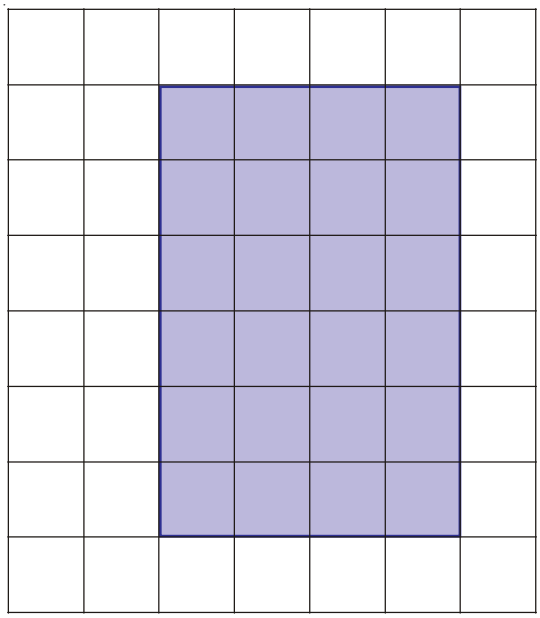
3) The diagram shows a poster which Chloe has on her wall.
When Chloe was standing on her head, looking in a mirror on the opposite wall at the poster on the wall behind her, how many letters could still be read the normal way?

CHLOE
BAXTER

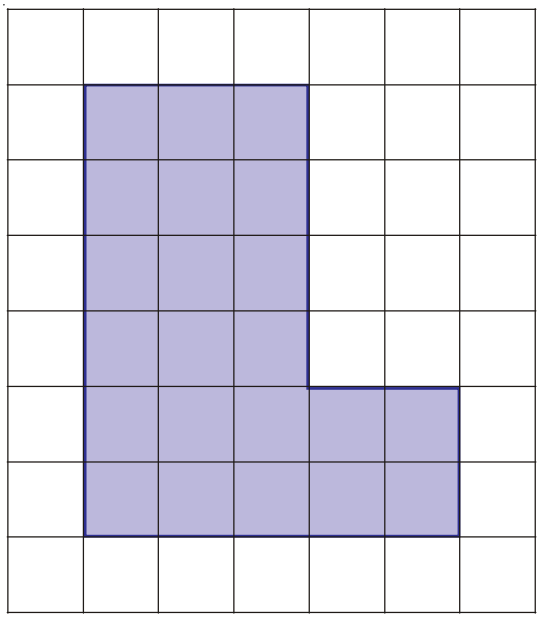
G8a

Perimeters
Counting Squares

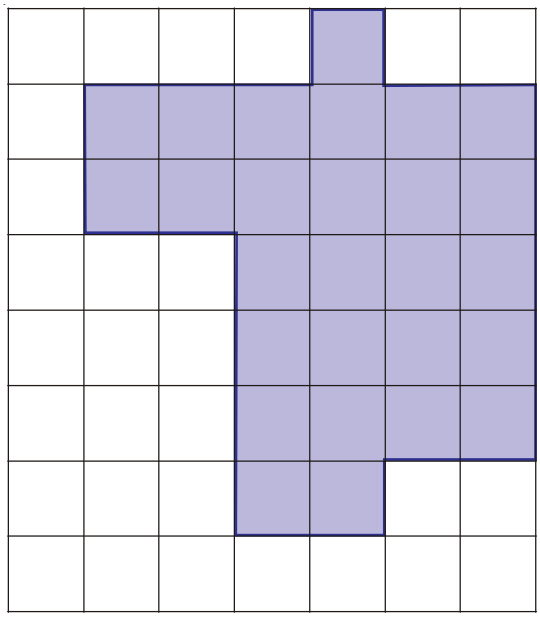
1) Find the perimeter of this rectangle on the cm grid.



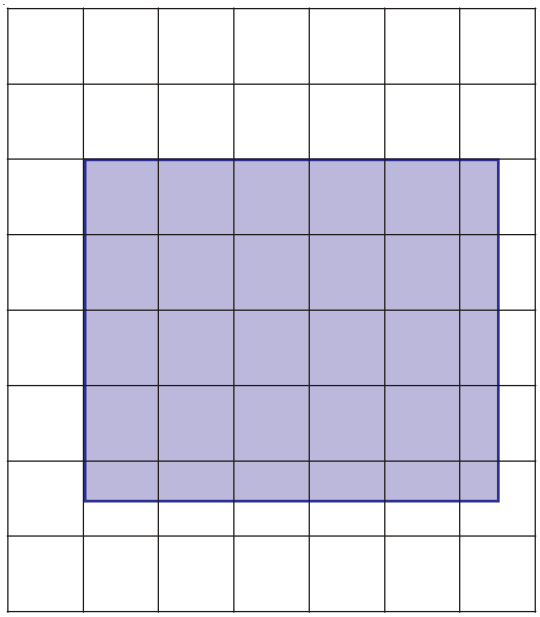
2) Find the perimeter of this shape on the cm grid.



3) Find the perimeter of this shape on the cm grid.



4) Find the perimeter of this shape on the cm grid.



G8a

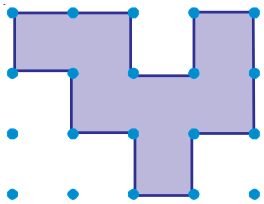
Perimeters
Counting Squares

On the dotty grid you can see a shape which has a perimeter of length 16 and an area of 7 squares.

Keeping the perimeter always 16, draw 9 more shapes which have areas of 8, 9, 10, 11, 12, 13, 14, 15 and 16 squares.

Perimeter = 16
Area = 7 squares

A



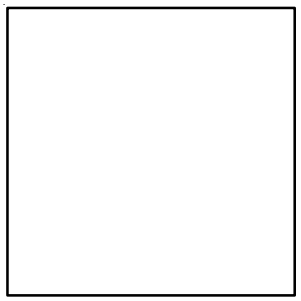
G8b

Perimeters
Using a Formula

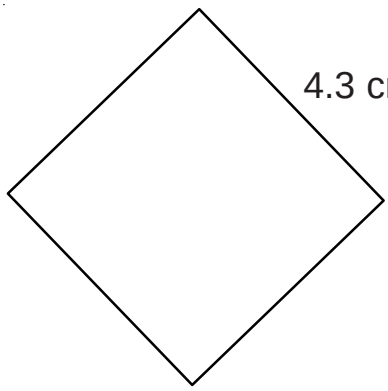
1) a) What is the formula for the perimeter of a square?

b) Use your formula to find the perimeter of the following squares.

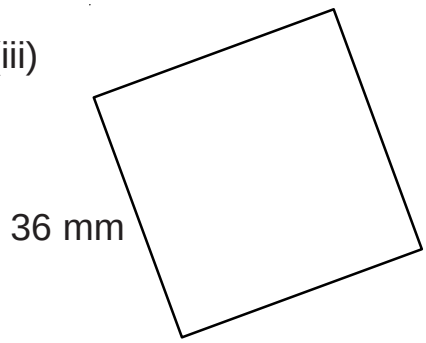
(i)



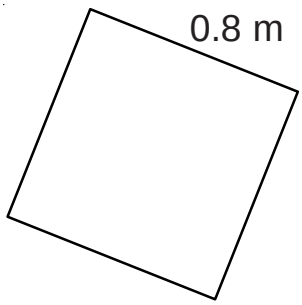
(ii)



(iii)



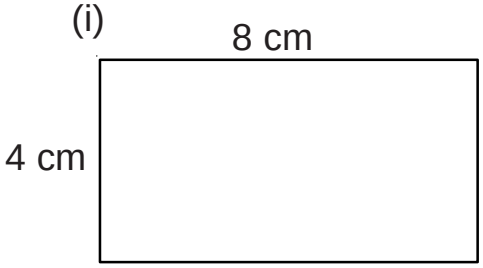
(iv)



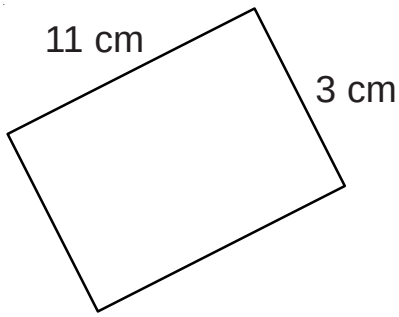
2) a) What is the formula for the perimeter of a rectangle?

b) Use your formula to find the perimeter of the following rectangles.

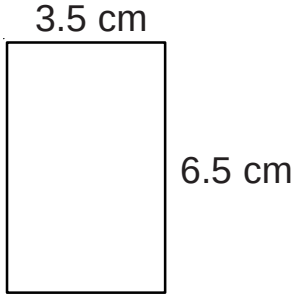
(i)



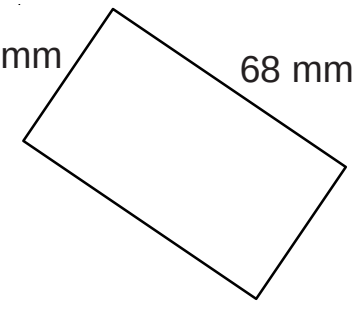
(ii)



(iii)



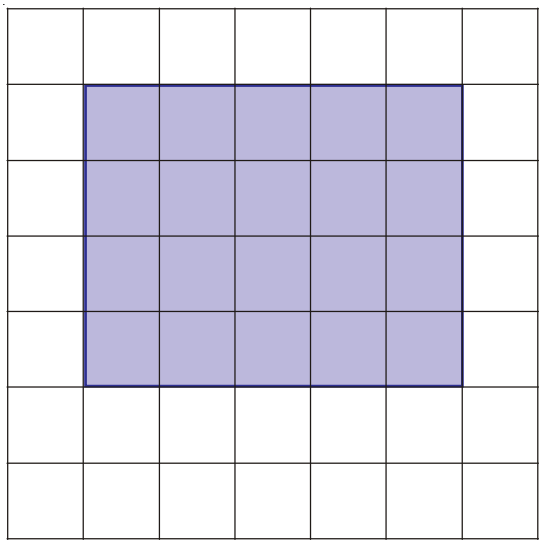
(iv)



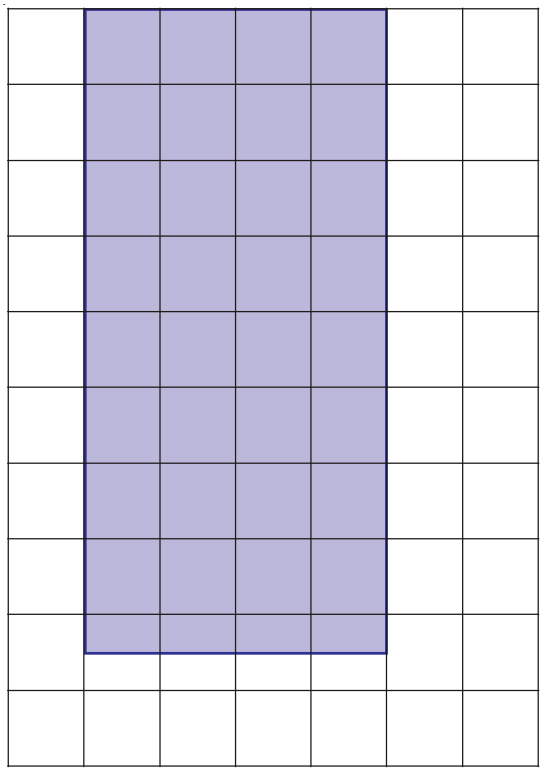
G9

Areas
Counting Squares

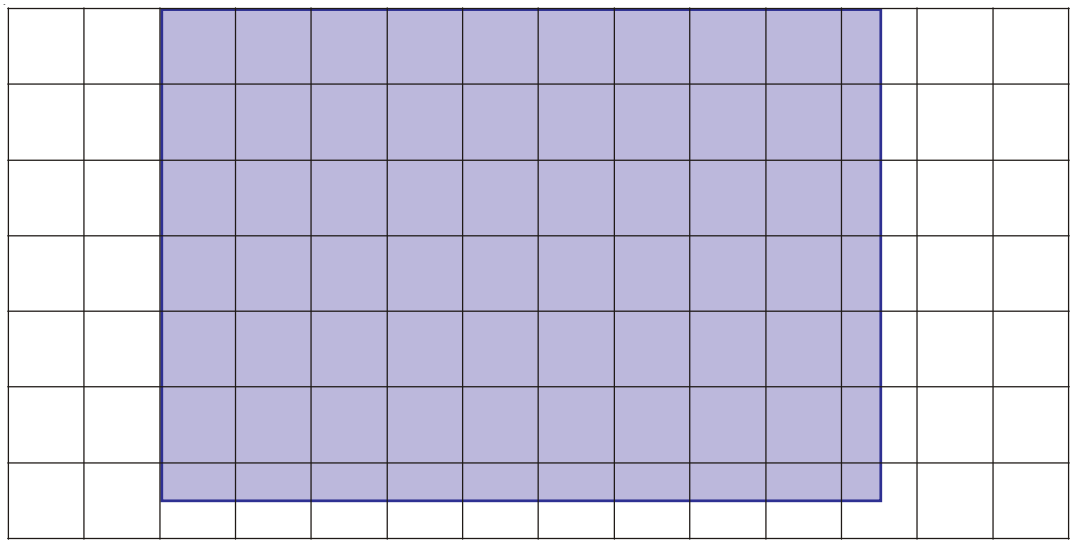
1) Find the area of the rectangle on this centimetre grid.



2) Find the area of the rectangle on this centimetre grid.



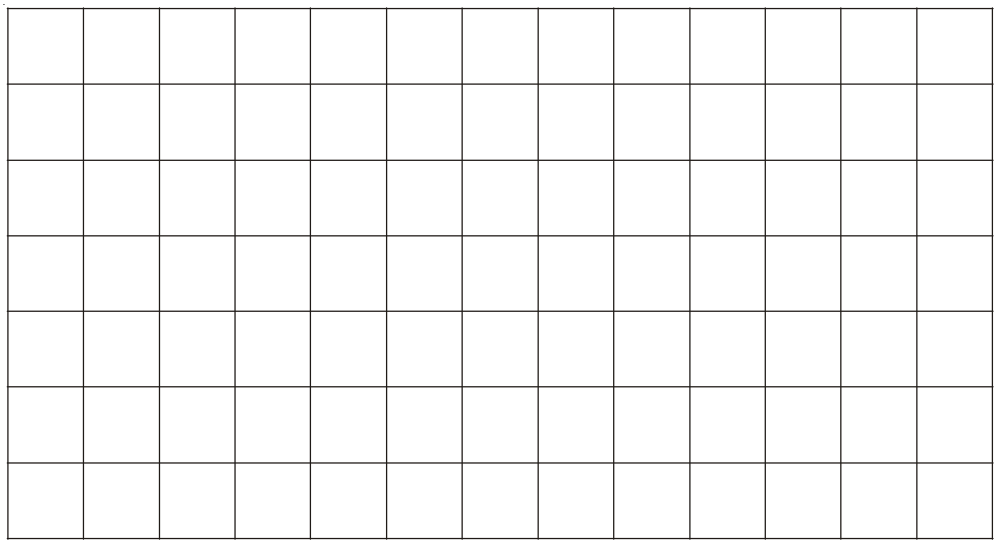
3) Find the area of the rectangle on this centimetre grid.



G9

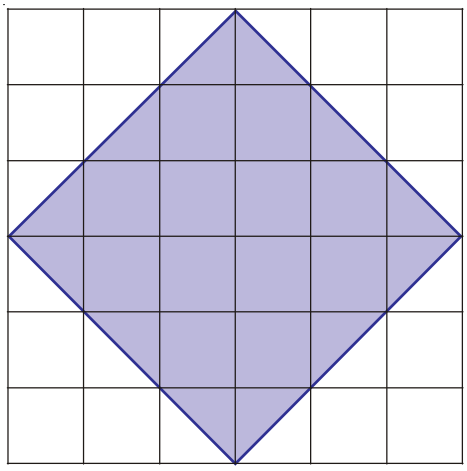
Areas
Counting Squares

1) Draw three different-shaped rectangles with an area of 12cm^2 on the centimetre grid.

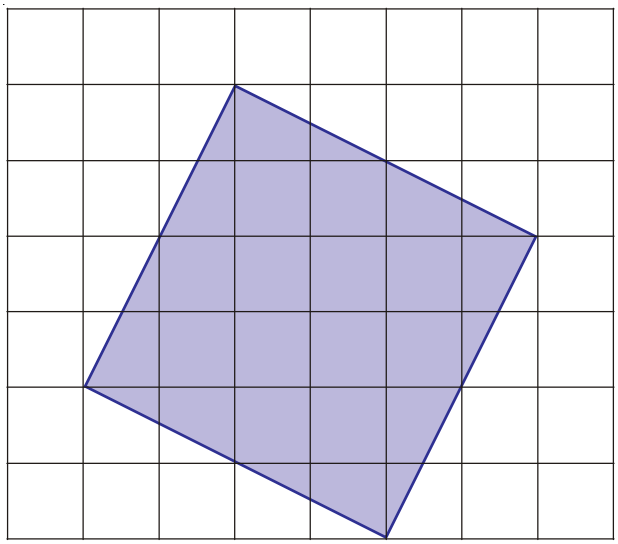


This is a difficult question

2) Find the area of the square on this centimetre grid.



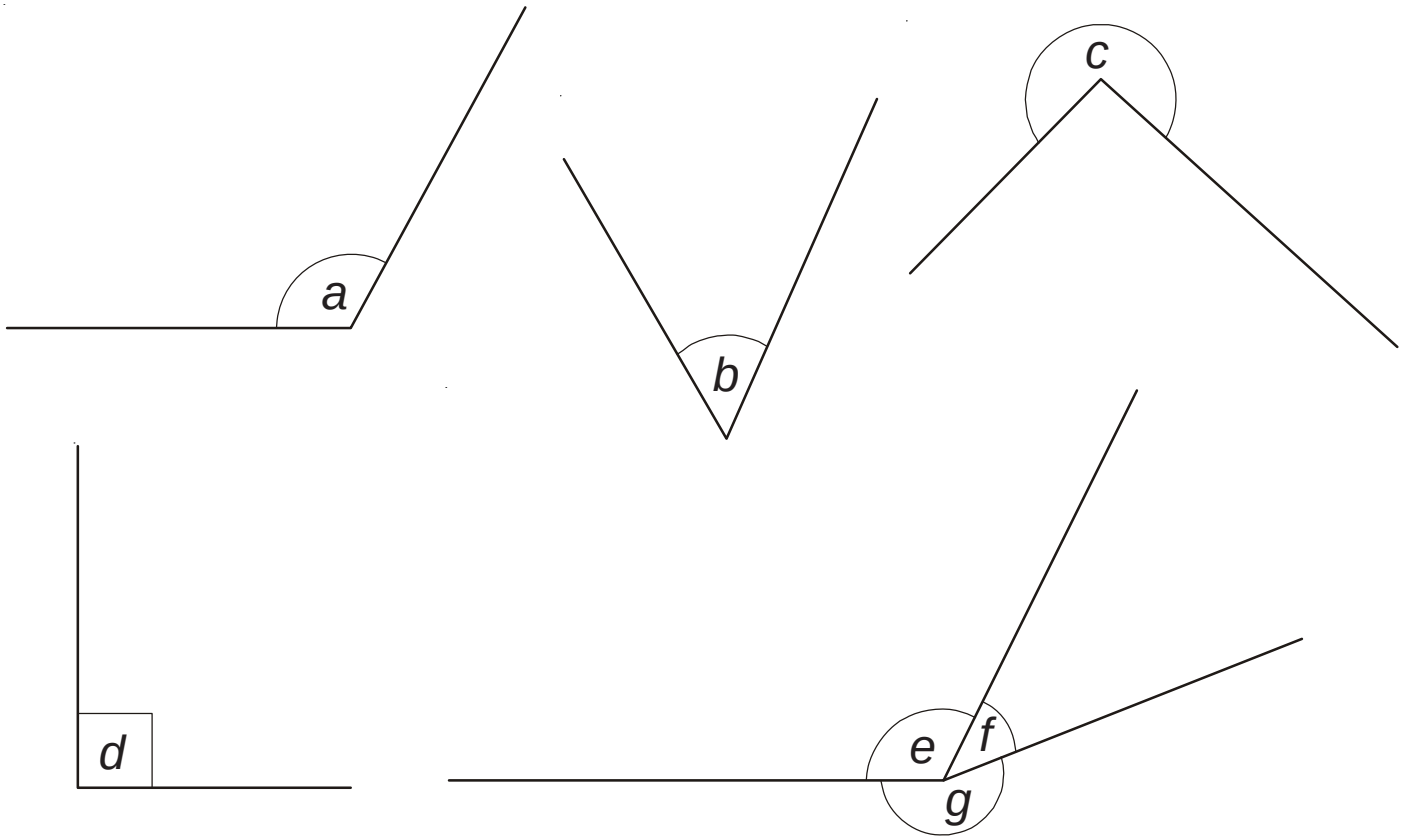
3) Find the area of the square on this centimetre grid.



G10a

Measuring and Drawing Angles
Introduction

1) Each of the angles below can be described as an acute angle, an obtuse angle, a reflex angle or a right angle.
Decide which each of them are.



2) a) Draw a triangle which has three acute angles.

b) Draw a triangle which has one obtuse angle and two acute angles.

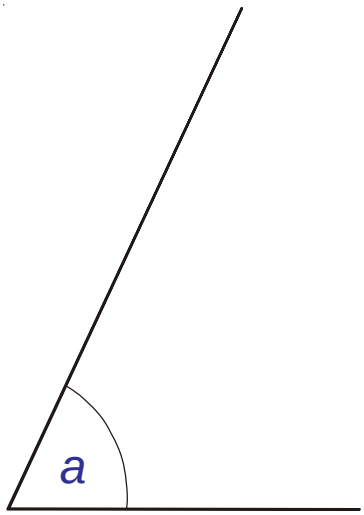
c) Draw a quadrilateral (4-sided shape) which has one reflex angle and three acute angles.

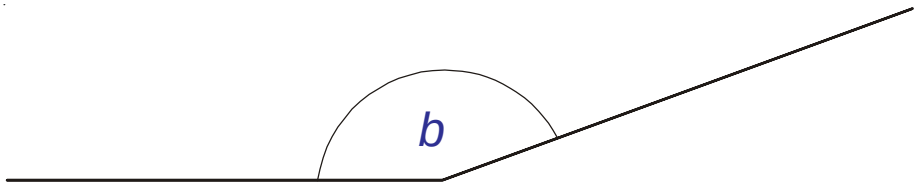
d) Draw a quadrilateral which has one right angle, one acute angle and two obtuse angles.

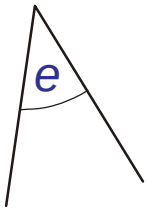
e) Draw a quadrilateral which has two obtuse angles and two acute angles.

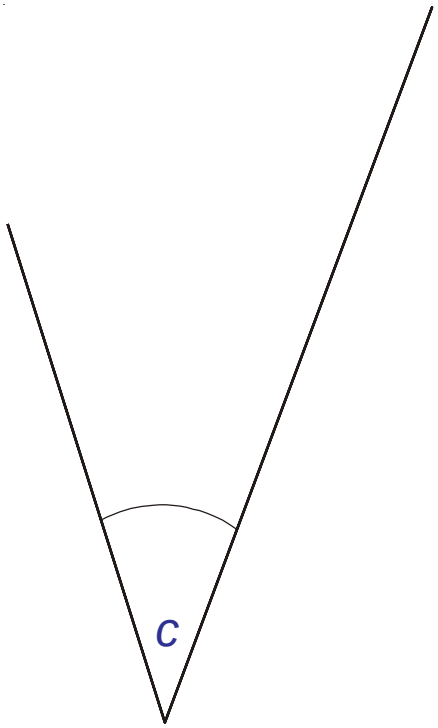
G10b Measuring Angles

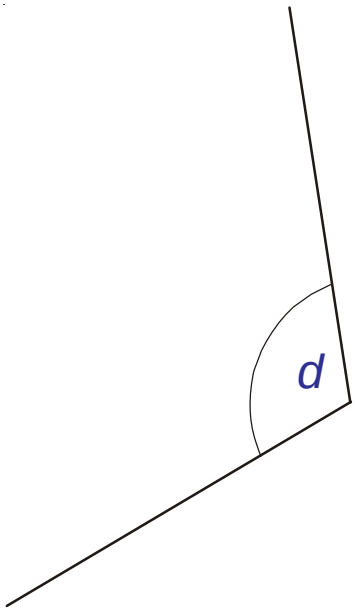
Use a protractor to measure the angles below.





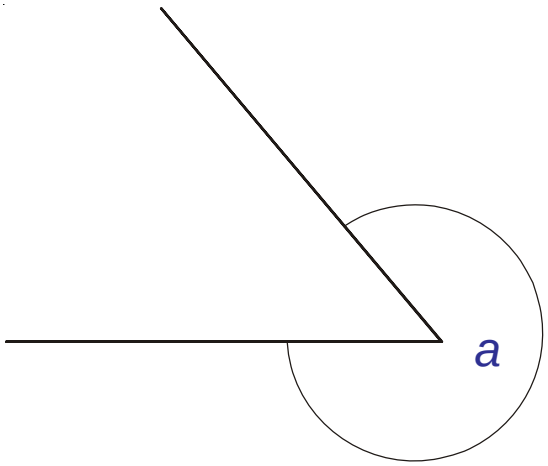


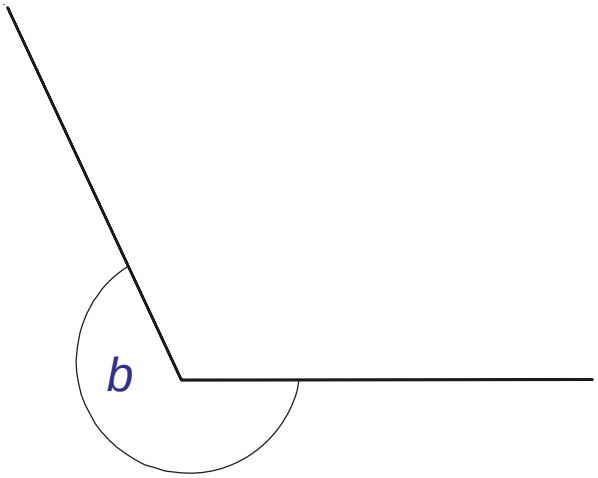


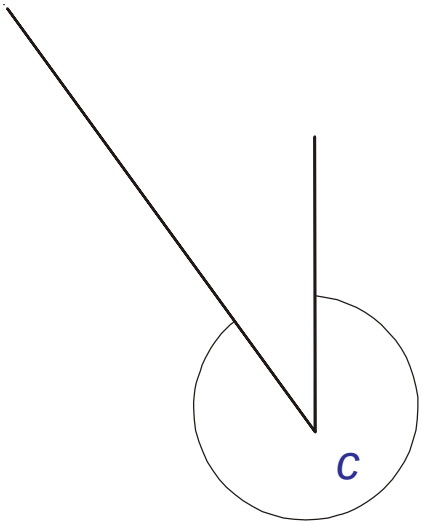


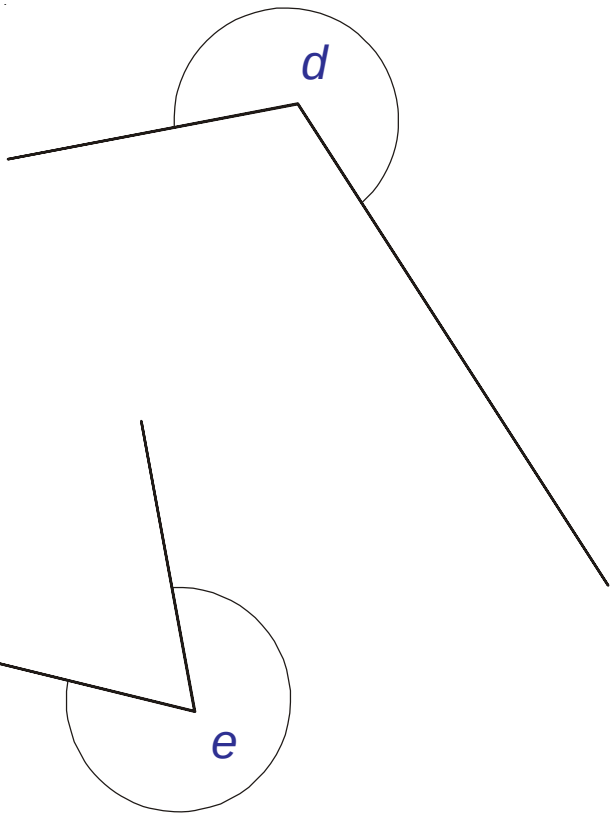
G10b Measuring Angles

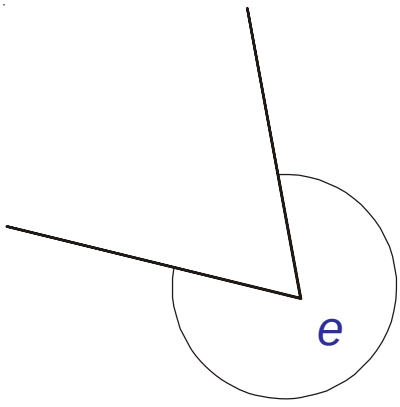
Use a protractor to measure the angles below.







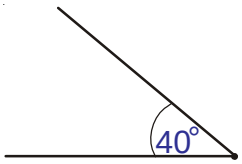




G10c Drawing Angles

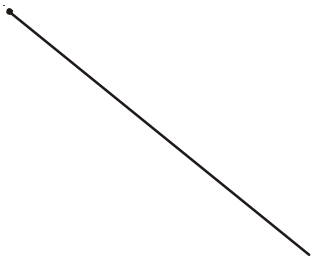
Draw the angle where you see the dot.
Here is an example:

40°



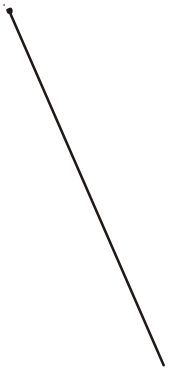
a) 70°

b) 135°



c) 28°

d) 171°



G10c Drawing Angles

Draw the angle where you see the dot.

a) 340°

b) 305°

c) 245°

d) 193°

P1 The Probability Scale

Estimate a probability (decimal) to go with these:

a) You will be on time for school on the next school day.

b) It will snow sometime this week.

c) Your teacher will smile at least once tomorrow.

d) You will have a disagreement with one of your friends.

e) England will win the World Cup in 2018.

f) England or France will win the World Cup in 2018.

S3

Frequency Tables
Ungrouped Data

Blue Green Red Yellow

1) 30 students were asked which of the four colours they liked best.
The results are listed below:

Red Green Blue Red Yellow Red Green Red
Green Yellow Red Blue Blue Red Green Blue
Red Green Green Yellow Blue Red Blue
Green Red Red Red Blue Green Green

Record these results in a tally chart.

2) Peter asked all the pupils in his class how many children there were (including themselves) in each of their families.

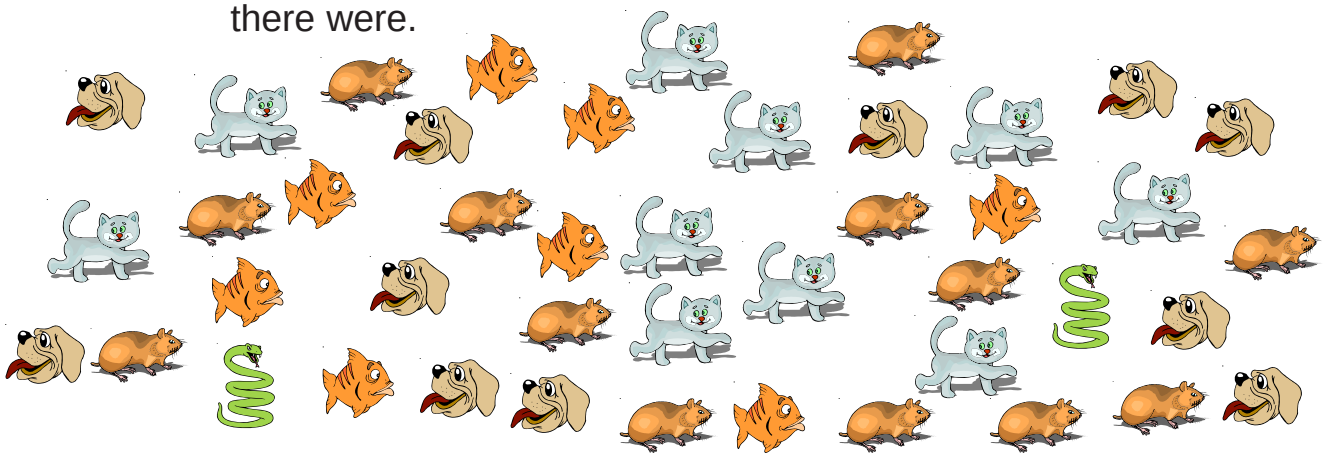
These are the results:

1, 3, 2, 2, 2, 1, 3, 2, 3, 4, 2, 1, 1, 4, 2, 6, 3, 2,
2, 1, 4, 2, 3, 3, 2, 1, 2, 5, 4, 2, 1

Show these results in a tally chart.

3) A teacher asked the pupils in her class to put stickers on the board to show which pets they had. The stickers were of dogs, cats, hamsters, goldfish and snakes.

Draw a tally chart to show how many of each pet there were.



S3

Frequency Tables
Ungrouped Data

This is the first paragraph of a book.

However, it is written in code where each letter has been replaced by a different letter.

Can you decode the paragraph?

There is a little bit of help at the bottom of the page.

Imjz zsmop mck dj m wmo-kww gmjh qbsos gdush mj kcos kw brcs loklkoqdkjp.

Bdp wmukrodqs kttrlmqdkj vmp qk tmlqros lkko lsmpmjqp mjh imfs qbsi vkof wko woss kj bdp gmjh. Bs vmpj'q usoz jdts.

Qbs jmis kw qbs kcos vmp Gmjts.

Some help

When you decode the paragraph you will find that:
'e' is the most common letter.
'a' is the second most common followed by
'o' third most common, then
'n' and 'r'
then 't'
then 's'.

S4 Frequency Tables Grouped Data

1) Here are the Maths test marks for two mixed ability Year 7 classes.

43	16	68	49	31	24	83	61	55	40	72	44	45	23	48	33	20
81	63	58	41	50	59	46	35	24	13	66	99	53	47	66	48	51
33	35	40	64	50	31	37	42	35	54	97	24	33	48	53	42	

Complete the frequency table to show all the results.

Mark	Tally	Frequency
20 and under		
21 - 30		
31 - 40		
41 - 50		
51 - 60		
61 - 70		
over 70		

2) A group of students measured their hand span (s) in in centimetres. Here are their results:

14.7	20.0	16.7	21.6	18.2	17.9	18.1
19.0	19.9	16.0	14.4	19.1	21.8	16.4
17.9	15.9	18.0	19.1	16.5	21.1	18.9

Complete the frequency table to show all the results.

Class interval	Tally	Frequency
$14 \leqslant s < 16$		
$16 \leqslant s < 18$		
$18 \leqslant s < 20$		
$20 \leqslant s < 22$		

S4 Frequency Tables Grouped Data

Sally, the organiser of a slimming club, keeps data on how much weight (w), in kg, her 60 members have lost over the previous twelve months.

She organises the data in a two-way table.

	Men	Women	Total
$0 \leqslant w < 5$	2		6
$5 \leqslant w < 10$			14
$10 \leqslant w < 15$	7		
$15 \leqslant w < 20$	2		10
$20 \leqslant w < 25$		11	14
Total	18		

a) Complete the two-way table.

b) How many members of the club were women?

c) How many women lost between 5 and 10 kg?

d) How many men lost less than 20 kg?

e) How many men lost 5 kg or more?

f) How many men and women lost 15 kg or more?