Starter

1) $\frac{5}{6} - \frac{3}{4}$

$= \frac{10}{12} - \frac{9}{12} = \frac{1}{12}$

2) Factorise 4b - 2ab

$2b(2 - a)$

3) $\frac{1}{3} \times \frac{6}{10}$

$= \frac{6}{30} = \frac{3}{15} = \frac{1}{5}$

4) Change the subject of the formula to b:

$m + 5 = ab - 2$

$+2 \quad +2$

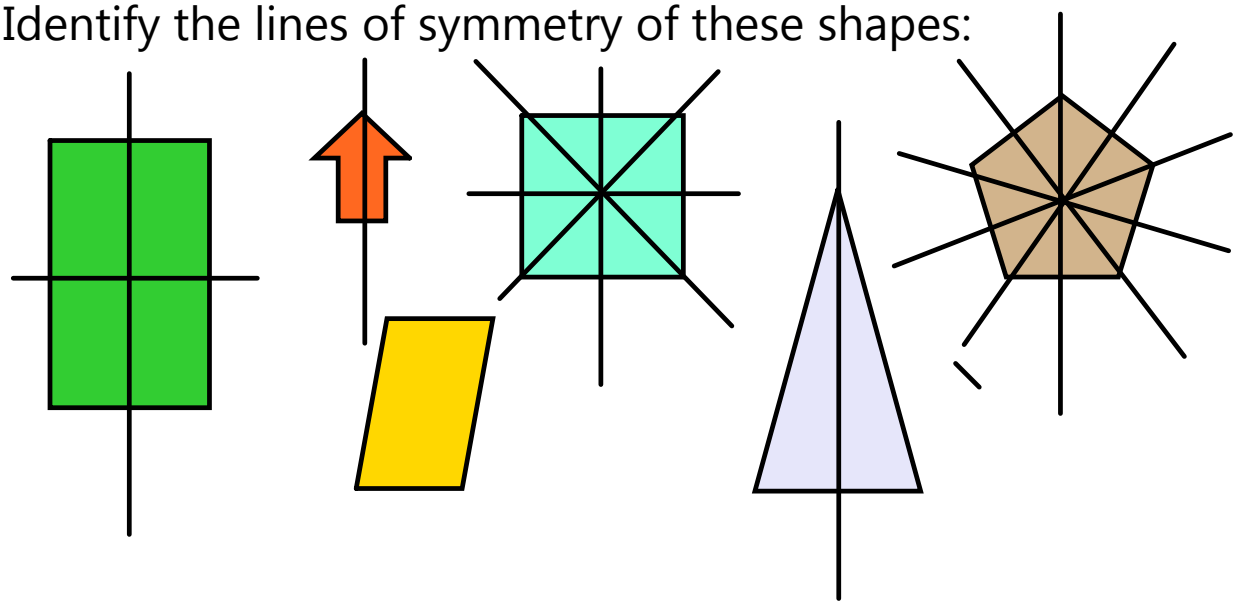
$m + 7 = ab$

$\frac{m+7}{a} = b \quad b = \frac{m+7}{a}$

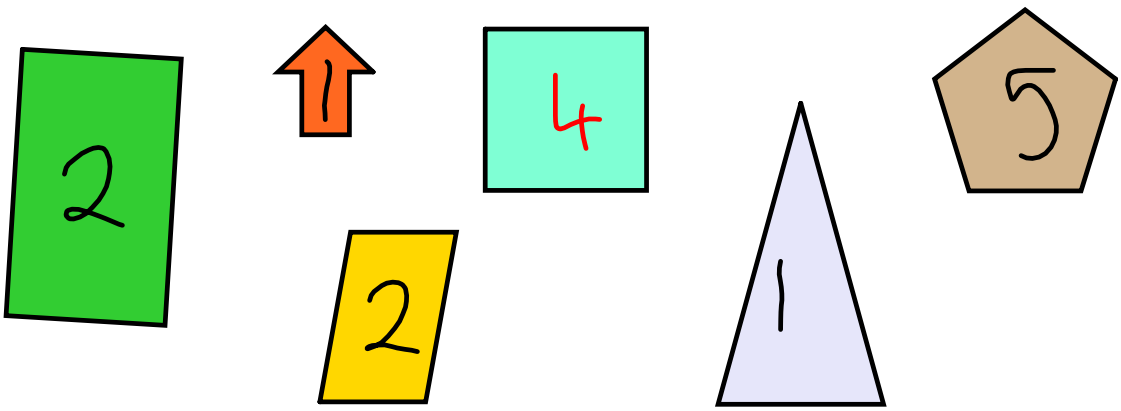
Today's Learning:

To identify line symmetry and rotational symmetry.

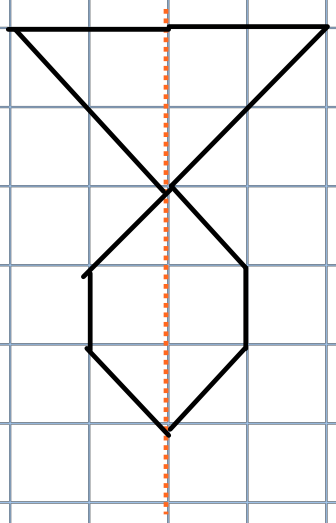
Identify the lines of symmetry of these shapes:



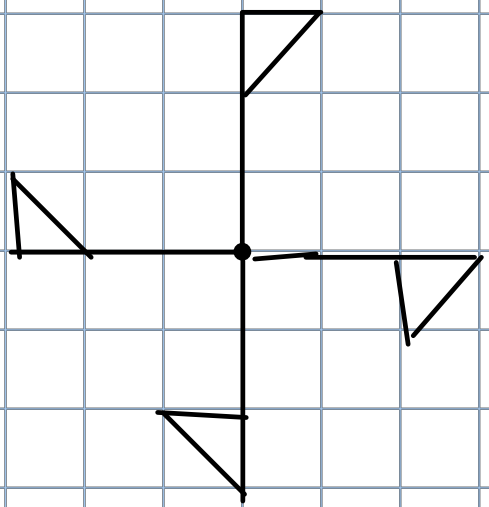
What is the order of rotational symmetry of these shapes?



Complete the shape so it has a line of symmetry:



Complete the shape so it has rotational symmetry of order 4:



Today's Learning:

To find the mean, median, mode and range.

15 people recorded the time they spent exercising over a week (in hours):

3.75 hrs

0.25 0.5 1 1 1.5 1.5 1.5 1.5 1.5 2 2.5 3 4 4 4

mean: 1.983 hours

Today's Learning:

To calculate the mean, median, mode and range.

Mean, Median, Mode and Range

Mean = add them all then divide

Median = middle (when in order)

Mode = most common

Range = Biggest - Smallest

e.g. 1) Number of past papers S4 pupils completed:

27, 29, 30, 30, 8, 0, 0, 2, 14, 13, 23, 22

0, 0, 2, 8, 13, 14, 22, 23, 27, 29, 30, 30

range = 30 - 0 = 30

mean: $\frac{198}{12} = 16.5$

mode: 0 and 30

median = 18

$\frac{14+22}{2}$

Starter

1) Multiply out the brackets and simplify:

a) (4w - 3)(2w + 3)

$8w^2 + 12w - 6w - 9$

$= 8w^2 + 6w - 9$

b) 3b(a - 2)

$3ab - 6b$

c) (b - 3)(2b - 2a)

$2b^2 - 2ab - 6b + 6a$

2) Factorise:

a) 2b + 4ab

$2(b + 2ab)$

$2b(1 + 2a)$

b) $g^2 - 25$

$(g - 5)(g + 5)$

c) $3ab - 4b^2c$

$b(3a - 4bc)$

Today's Learning:

To practise using frequency tables, to revise pie charts, and to revise stem and leaf diagrams.

Find the mean, median, mode and range:

No. of children	Frequency	No. x frequency
0	10	0
1	12	12
2	8	16
3	5	15
4	1	4
5	2	10
	38	57

22

mean $= \frac{57}{38} = 1.5$

median = 1

mode = 1

range = 5 - 0 = 5

Averages from Frequency Tables

No. of siblings	Frequency	No. x frequency
0	0	0
1	6	6
2	4	8
3	4	12
	14	26

mean $= \frac{26}{14} = 1.86$ (2dp)

median = 2

mode = 1

range = 3 - 1 = 2

Grouped Frequency Tables

These are the heights of pupils in class 3F6.

160 cm, 158 cm, 162 cm, 151 cm, 170 cm, 148 cm, 139 cm, 164 cm, 144 cm, 168 cm, 155 cm, 180 cm, 156 cm, 159 cm,

Complete the frequency table:

Height (cm)	Tally	Frequency
130 - 139	1	1
140-149	11	2
150-159	𝍸	5
160-169	𝍸 1	6
170-179	1	1
180-189	1	1

Find the mean, median, mode, range from this stem and leaf diagram of restaurant bills:

0	5	6	8	8	9		
1	1	1	1	2	3	5	8
2	0	1	2	5	6		

Key:

1 | 2 = £12

n = 17

mean: $\frac{241}{17}$ = 14.18 (2dp)

median: 12

mode: 11

range: 21

Starter

1) $3 + 2 \times (-6) + (3 - 1)^2$

$= 3 + 2 \times (-6) + (2)^2$

$= 3 + 2 \times (-6) + 4$

$= 3 - 12 + 4 = -5$

2) Simplify $(4a^2)^3$

$64a^6$

16
2×4
64

3) Factorise $m^2 - n^2$

$(m - n)(m + n)$

4) Simplify $\sqrt{50}$

$= \sqrt{25 \times 2}$

$= 5\sqrt{2}$

Stem and Leaf Diagrams

e.g. The time 15 women spent running was recorded in minutes:

15 22 31 19 48 24 31 30 15 37

17 49 36 44 25

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

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

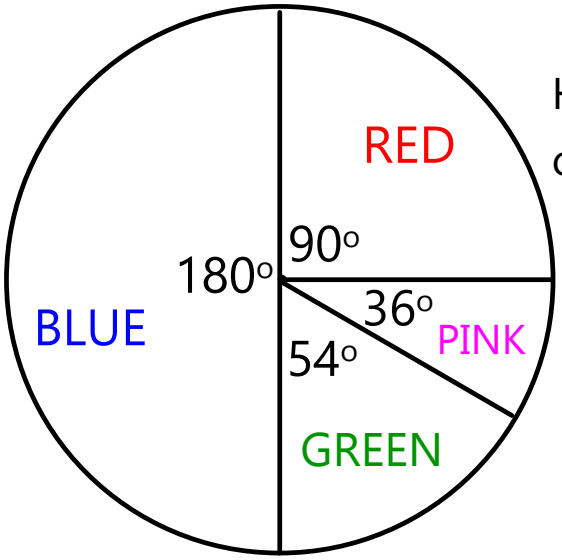
key

2|2 = 22 mins

n = 15

360°

20 people were asked what their favourite colour was.



How many people liked each colour?

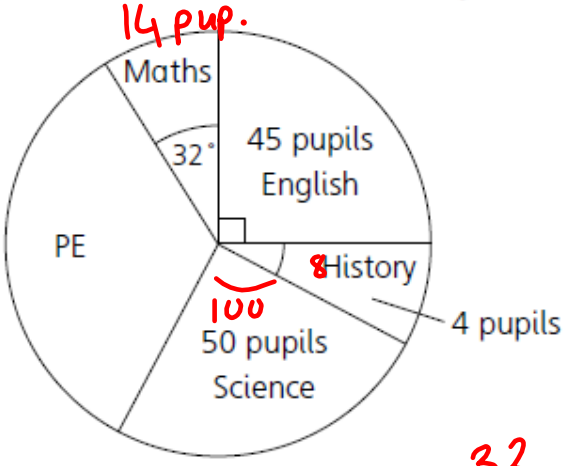
Blue - 10 people

Red - 5 people

$\frac{36}{360} = \frac{1}{10}$ 2 people

$\frac{54}{360} \times 20$

This pie chart shows the favourite subjects of some children:



360° 45x4 = 180 pupils

2° → 1 pupil

a How many pupils chose maths? $\frac{32}{360} = \frac{4}{45}$ 16 pupils

b What is the angle for history? 8°

c What is the angle for science? 100°

d What is the angle for PE? 130°

e How many pupils chose PE? 65

f How many pupils took part in the survey?

Starter

$2 \times 15 = 30$

1) Without a calculator, find 2.3 x 15 34.5

$3 \times 15 = 45$

2) Multiply out and simplify: $0.3 \times 15 = 4.5$

$(2p - 1)(p - 5)$ $2p^2 - 10p - p + 5$

$= 2p^2 - 11p + 5$

3) Factorise $3m^2 - 12$

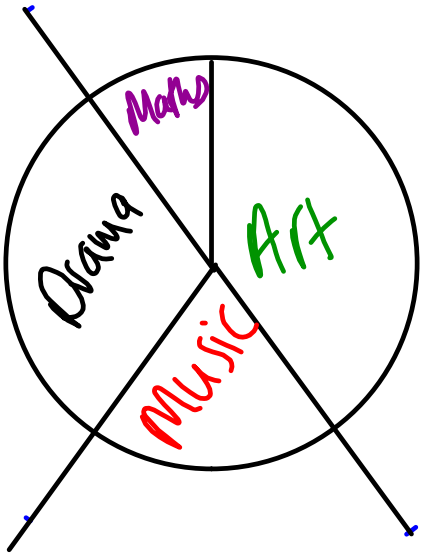
$= 3(m^2 - 4) = 3(m+2)(m-2)$

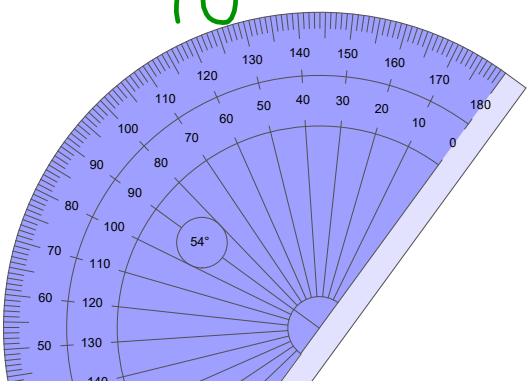
4) Round 5.671937 to 3 significant figures

5.67

Some pupils were asked what their favourite subject was:

Fav. subject	No. of pupils	Angle
Art	4	$\frac{4}{10} \times 360^\circ = 144^\circ$
Music	2	$\frac{2}{10} \times 360 = 72^\circ$
Drama	3	$\frac{3}{10} \times 360 = 108^\circ$
Maths	1	
	10	





Calculating Probability

$$\text{probability(event)} = \frac{\text{no. of preferred outcomes}}{\text{no. of possible outcomes}}$$

e.g. 1) P(rolling an odd number on a dice) = $\frac{3}{6}$

$= \frac{1}{2}$

Probability Recap

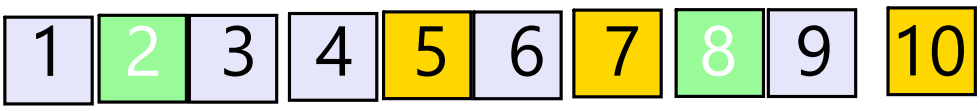
1) If I flip a coin, what is the probability I get tails?

2) If I roll a 6-sided dice, what is the probability that it will land on a 2?

3) If I roll a 6-sided dice, what is the probability that it will land on an even number?

4) If I flip a coin and get tails, tails, tails, what is the probability I get heads on the 4th flip?

5) 8 apples are bad in a barrel of 50. If I pick out an apple at random, what is the probability it is bad? $\frac{8}{50} = \frac{4}{25}$



There are cards numbered 1 to 10. I pick out a card at random. What is the probability it is:

a) a yellow card?

b) a number greater than 7?

c) an even numbered yellow card?