

Now revised
to support fully the
National Numeracy Framework

THS
*The
Homework
Series*

Mathematics A₇

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HOMEWORK N14

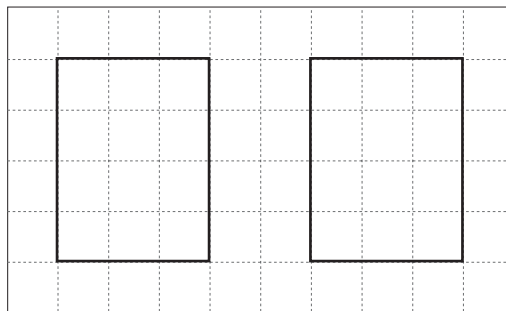
Do not use a calculator for this homework

- Find:
 - $\frac{1}{5}$ of 20 pencils
 - $\frac{3}{5}$ of 25 pencils
 - $\frac{2}{3}$ of 27 pens
 - $\frac{5}{8}$ of 40 cars
 - $\frac{7}{10}$ of 120 cans
 - $\frac{7}{10}$ of 250 cards.
- In a survey of 80 cars:
 - $\frac{1}{4}$ of the cars were red,
 - $\frac{2}{5}$ of the cars were white,
 - $\frac{3}{10}$ of the cars were blue,
 - the rest were *other colours*.
 - How many cars were red?
 - How many cars were white?
 - How many cars were blue?
 - How many cars were *other colours*?
 - What fraction were *other colours*?
- Fastflame sell three sizes of cola can: Regular, Large, and Mega
On one day, they sold 360 cans altogether.
 - $\frac{2}{9}$ were Regular cans,
 - $\frac{5}{12}$ were Large,
 - the rest were Mega.
 - How many cans of each size were sold?
 - What fraction of the cans sold were Mega?
- Five friends share six pizzas between them. They all have an equal share. How much pizza is each person's share?
- In a case of 60 tins of cat food:
 - $\frac{2}{5}$ of the tins are sardine,
 - $\frac{4}{15}$ of the tins are cereal,
 - $\frac{1}{12}$ are beef,
 - $\frac{1}{10}$ are chicken,
 - and the rest are turkey.
 - How many tins are there of each variety?
 - What fraction are turkey variety?
 - Joel buys three cases of cat food. What fraction of these tins are cereal?

- A *tug-of-war* team (8 people) share a prize of three fruit cakes equally between them. What is each person's share?
- In a box of 45 chocolates:
 - $\frac{4}{9}$ are milk chocolate,
 - $\frac{2}{5}$ are plain chocolate,
 - the rest are white chocolate.
 - How many are white chocolate? Explain your reasons.
 - What fraction are white chocolate?

HOMEWORK N15

- Make a copy of these shapes.

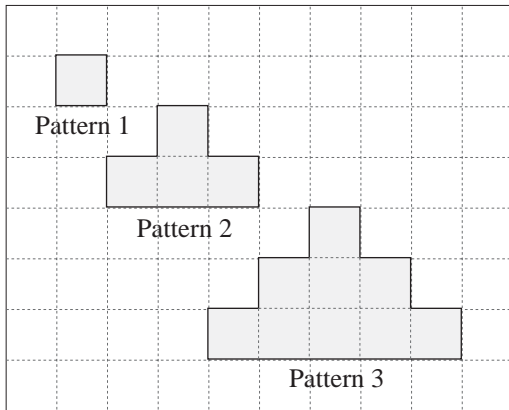


- Shade $\frac{3}{4}$ of one shape.
 - Shade $\frac{9}{12}$ of the other shape.
 - Explain why $\frac{3}{4}$ and $\frac{9}{12}$ are equivalent fractions.
 - Give two other fractions equivalent to $\frac{3}{4}$.
- Which of these is **not** equivalent to $\frac{3}{8}$?
 $\frac{30}{80}$, $\frac{36}{96}$, $\frac{21}{56}$, $\frac{300}{8000}$
 - Which of these are equivalent to $\frac{3}{5}$?
 $\frac{16}{25}$, $\frac{24}{45}$, $\frac{24}{40}$, $\frac{51}{85}$
 - Which is larger: $\frac{4}{6}$ or $\frac{2}{3}$?
Explain your answer with a diagram.
 - Twenty runners shared 16 oranges equally. Which of these statements is true?
Explain your answers with diagrams.
 - Each runner had $\frac{4}{5}$ of an orange.
 - Each runner had more than $\frac{1}{2}$.
 - Each runner had less than $\frac{3}{4}$.
 - Each runner had less than $\frac{7}{10}$.

ALGEBRA

HOMEWORK A1

1 Draw the next three patterns in this sequence.



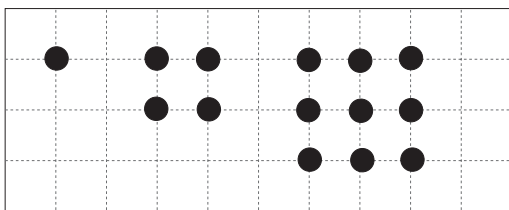
2 For each sequence, give the next three terms.

- a 1, 3, 5, 7, ...
- b 7, 14, 21, 28, ...
- c 2, 4, 8, 16, ...
- d 80, 40, 20, ...
- e 1, 6, 16, 31, ...

3 For each sequence, give the next three terms.

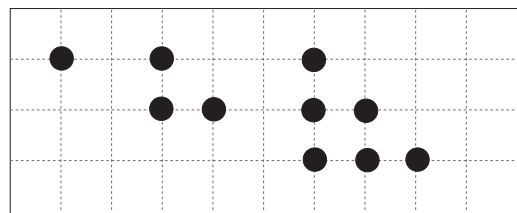
- a $\frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \dots$
- b 2.5, 2.25, 2, ...
- c 0.35, 0.7, 1.05, ...
- d 1, 1.5, 2.5, 4.5, ...
- e 0.6, 1.2, 1.8, 3, ...

4 This is the start of the sequence of square numbers.



- a What is the fifth square number?
- b List the first fifteen square numbers.
- c Is 360 a square number?
Explain how you decided.

- 5 List all the square numbers that are greater than 400 and less than 600.
- 6 A virus doubles its number of cells every hour. If the virus starts with a single cell, how many cells will there be after 24 hours?
- 7 This is the start of the sequence of triangle numbers.



- a List the first six triangle numbers.
- b Is 91 a triangle number?
Explain how you decided.

8 The rule for the next term in a sequence is:

add 3

The sequence starts in this way:

2, 5, ...

- a Copy and continue the sequence for the first six terms.
- b Is 47 a term in this sequence?
Explain how you decided.

9 Write a rule for the next term in this sequence.

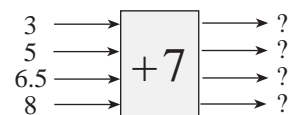
1, 5, 9, 13, ...

10 Write a rule for the next term in this sequence.

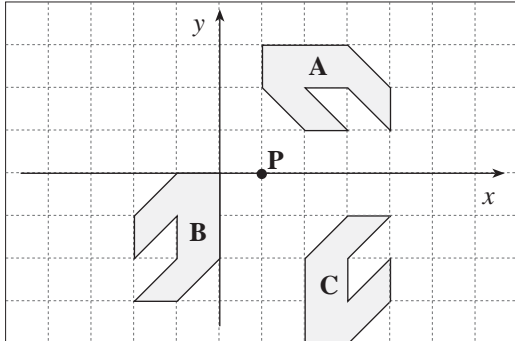
8, 2, -4, -10, ...

HOMEWORK A2

1 Copy and complete this number machine.



3 Copy this diagram



- Give the rotation that maps A onto B.
- What rotation maps A onto C?
- What rotation maps B onto A?
- Shape D is a rotation of A by 270° clockwise about P. Draw and label shape D.

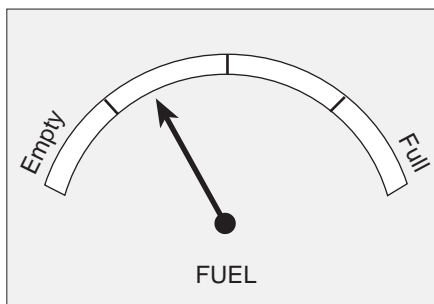
4 Give a rotation that has the same effect as a rotation of 90° clockwise about $(-3, 2)$.

5 On a pair of axes plot the points $(0, 2)$, $(0, 1)$, $(1, 0)$, $(1, -1)$, $(2, -1)$, $(3, 0)$, $(2, 1)$, $(1, 1)$. Join the points in order, label the shape A.

- Give the coordinates of the image of A after a 90° rotation anticlockwise about $(-2, -2)$.
- Find the area of Shape A.
- Explain what happens to the area of a shape when it is rotated.

HOMWORK S21

1 a Estimate what fraction of the petrol tank is filled with fuel.



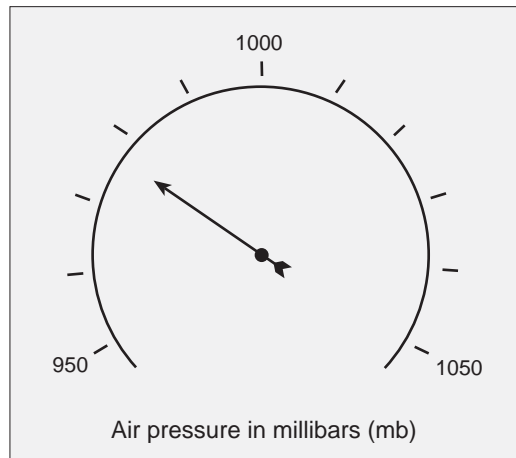
b The tank holds 48 litres when full. Estimate the number of litres that can be added.

2 A barometer dial is marked round the outside with these weather zones:

Stormy, Rain, Change, Fair and Very Dry.

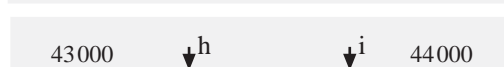
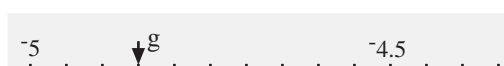
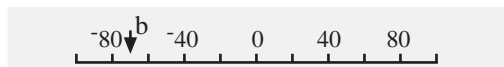
Each zone depends on the air pressure.

<i>Stormy</i>	between 950 mb and 970 mb
<i>Rain</i>	between 970 mb and 985 mb
<i>Change</i>	between 985 mb and 1008 mb
<i>Fair</i>	between 1008 mb and 1032 mb
<i>Very Dry</i>	between 1032 mb and 1050 mb



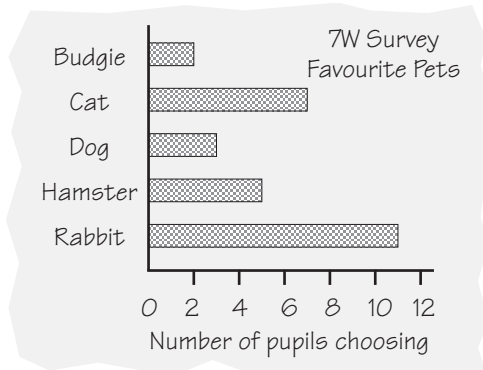
- Which zone is the hand pointing to?
- Make a copy of the dial, and colour and label the different weather zones.

3 What reading do each of the pointers show on these scales?



HOMEWORK D3

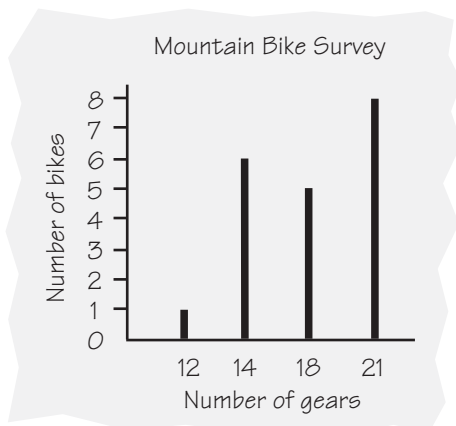
1



- How many pupils in 7W chose rabbit?
- Which pet did two pupils choose?
- How many pupils chose cat or dog?

2 Use the data from Homework D2 question 2 to draw a bar chart for the 7Y survey.

3



- How many bikes in the survey have 14 gears?
- Which number of gears is the most popular?
- How many bikes are in the survey?

4

Road Bike Survey - Number of gears

18	14	18	12	14	14	7	18	18	12
7	14	18	14	14	12	6	18	6	7
14	7	12	14	12	18	12	7	18	14

- Make a tally chart for this data.
- Draw a bar-line graph to show this data.
- Which number of gears is the most popular for road bikes in the survey?

5

Mountain Bike Survey

Make	Total
Claud Butler	3
Falcon	5
Muddy Fox	6
Raleigh	4
Others	2

Draw a bar chart for this mountain bike survey.

6

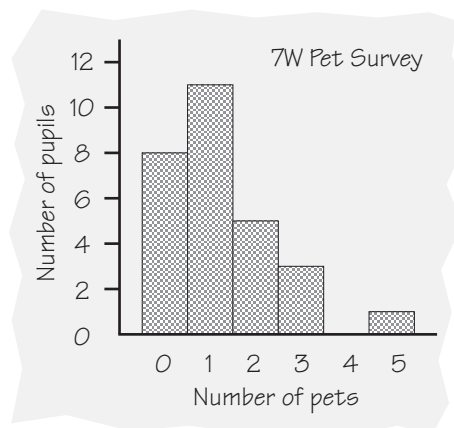
Mountain Bike Survey
Size of frame (cm)

53	46	38	46	53
51	46	51	48	51
53	51	51	48	53
56	53	38	51	51

- Make a tally chart for this data.
- Draw a bar-line graph to show this data.

HOMEWORK D4

1



- How many pupils in class 7W have 1 pet?
- How many pupils have at least 2 pets?

2

A class has 27 pupils.
The most popular number of pets is 1.
No pupil has more than 4 pets.
14 pupils have at least 2 pets.
Twice as many pupils have 1 pet as 3 pets.

Draw a possible bar chart for this class.