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to support fully the
National Numeracy Framework

THS

The Homework Series

Mathematics A7

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Contents

HOMEWORK N14

Do not use a calculator for this homework

1 Find:
- **a** $^1/_5$ of 20 pencils
- **b** $^3/_5$ of 25 pencils
- **c** $^2/_3$ of 27 pens
- **d** $^5/_8$ of 40 cars
- **e** $^7/_{10}$ of 120 cans
- **f** $^7/_{10}$ of 250 cards.

2 In a survey of 80 cars:
$^1/_4$ of the cars were red,
$^2/_5$ of the cars were white,
$^3/_{10}$ of the cars were blue,
the rest were *other colours*.

- **a** How many cars were red?
- **b** How many cars were white?
- **c** How many cars were blue?
- **d** How many cars were *other colours*?
- **e** What fraction were *other colours*?

3 *Fastflame* sell three sizes of cola can:
Regular, Large, and Mega

On one day, they sold 360 cans altogether.
$^2/_9$ were Regular cans,
$^5/_{12}$ were Large,
the rest were Mega.

- **a** How many cans of each size were sold?
- **b** What fraction of the cans sold were Mega?

4 Five friends share six pizzas between them.
They all have an equal share.
How much pizza is each person's share?

5 In a case of 60 tins of cat food:
$^2/_5$ of the tins are sardine,
$^4/_{15}$ of the tins are cereal,
$^1/_{12}$ are beef,
$^1/_{10}$ are chicken,
and the rest are turkey.

- **a** How many tins are there of each variety?
- **b** What fraction are turkey variety?
- **c** Joel buys three cases of cat food.
What fraction of these tins are cereal?

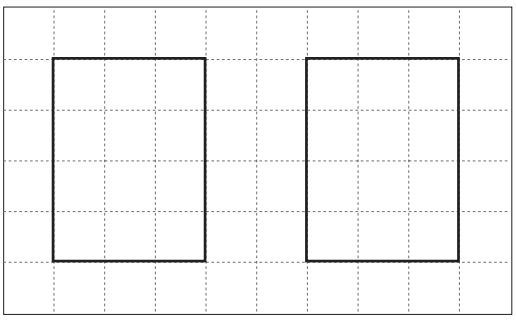
6 A *tug-of-war* team (8 people) share a prize of three fruit cakes equally between them.
What is each person's share?

7 In a box of 45 chocolates:
$^4/_9$ are milk chocolate,
$^2/_5$ are plain chocolate,
the rest are white chocolate.

- **a** How many are white chocolate?
Explain your reasons.
- **b** What fraction are white chocolate?

HOMEWORK N15

1 Make a copy of these shapes.



- **a** Shade $^3/_4$ of one shape.
- **b** Shade $^9/_{12}$ of the other shape.
- **c** Explain why $^3/_4$ and $^9/_{12}$ are equivalent fractions.
- **d** Give two other fractions equivalent to $^3/_4$.

2 Which of these is **not** equivalent to $^3/_8$?

$^{30}/_{80}$, $^{36}/_{96}$, $^{21}/_{56}$, $^{300}/_{8000}$

3 Which of these are equivalent to $^3/_5$?

$^{16}/_{25}$, $^{24}/_{45}$, $^{24}/_{40}$, $^{51}/_{85}$

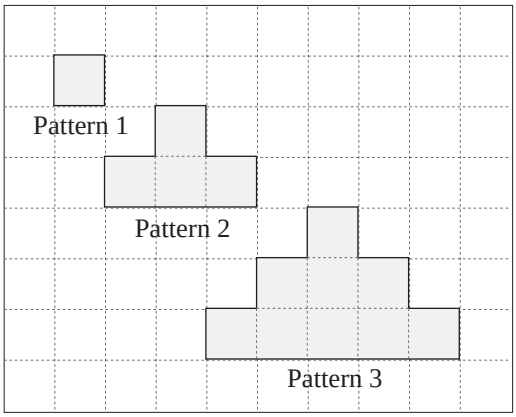
4 Which is larger: $^4/_6$ or $^2/_3$?
Explain your answer with a diagram.

5 Twenty runners shared 16 oranges equally.
Which of these statements is true?
Explain your answers with diagrams.
- **a** Each runner had $^4/_5$ of an orange.
- **b** Each runner had more than $^1/_2$.
- **c** Each runner had less than $^3/_4$.
- **d** Each runner had less than $^7/_{10}$.

ALGEBRA

HOMEWORK A1

1 Draw the next three patterns in this sequence.



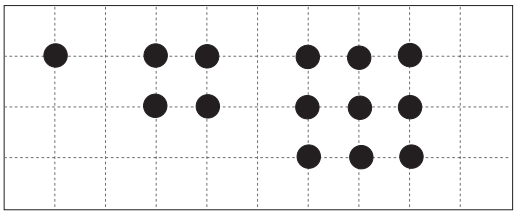
2 For each sequence, give the next three terms.

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

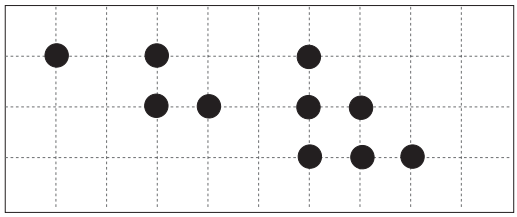


a What is the fifth square number?
b List the first fifteen square numbers.
c Is 360 a square number?
Explain how you decided.

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.

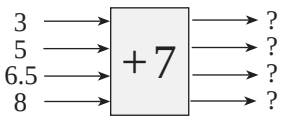
1, 5, 9, 13, …

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

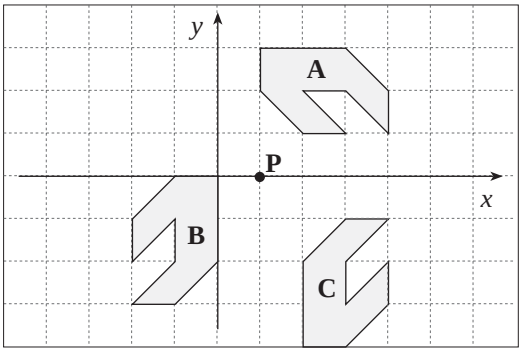
8, 2, ⁻4, ⁻10, …

HOMEWORK A2

1 Copy and complete this number machine.



3 Copy this diagram



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

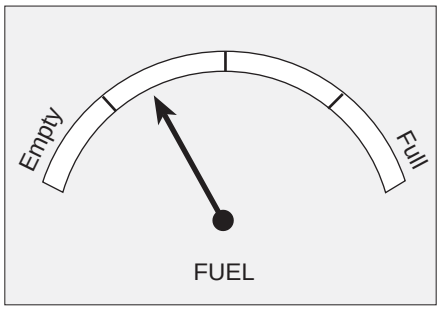
4 Give a rotation that has the same effect as a rotation of 90° clockwise about (⁻3, 2).

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.

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

HOMEWORK S21

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

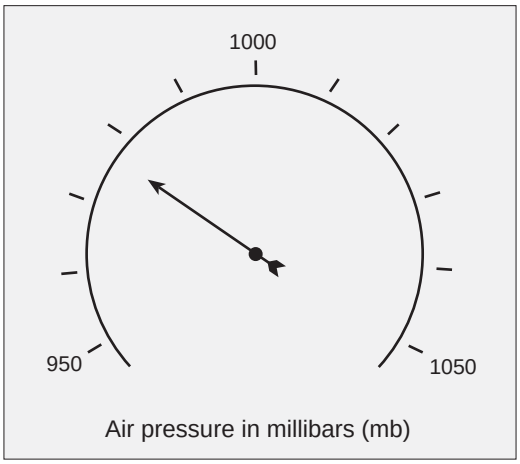


b The tank holds 48 litres when full. Estimate the number of litres that can be added.

2 A barometer dial is marked round the outside with these weather zones:
Stormy, *Rain*, *Change*, *Fair* and *Very Dry*.

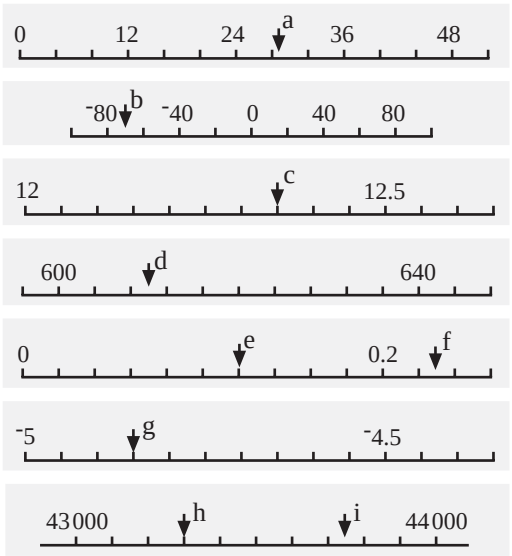
Each zone depends on the air pressure.

Stormy	between 950 mb and 970 mb
Rain	between 970 mb and 985 mb
Change	between 985 mb and 1008 mb
Fair	between 1008 mb and 1032 mb
Very Dry	between 1032 mb and 1050 mb



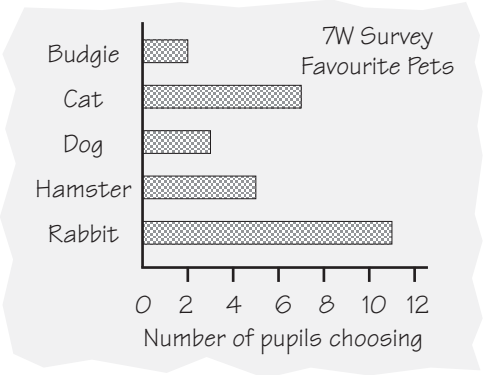
a Which zone is the hand pointing to?
b Make a copy of the dial, and colour and label the different weather zones.

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



HOMEWORK D3

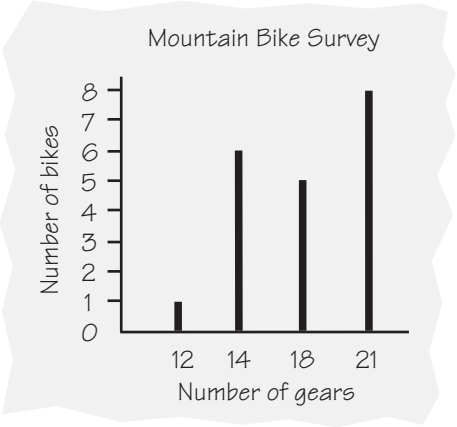
1



a How many pupils in 7W chose rabbit?
b Which pet did two pupils choose?
c 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



a How many bikes in the survey have 14 gears?
b Which number of gears is the most popular?
c 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

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

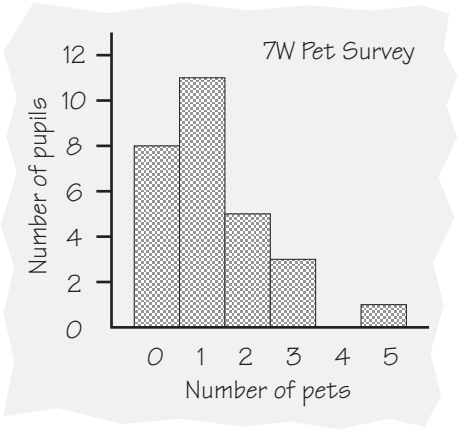
Mountain Bike Survey
Size of frame (cm)

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

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

HOMEWORK D4

1



a How many pupils in class 7W have 1 pet?
b 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.