

SAT Topic sheet Percentages & Ratio

- 1) This is how Caryl works out **15% of 120** in her head.

10% of 120 is **12**

5% of 120 is **6**

so **15%** of 120 is

- a) Show, in a similar way, how Caryl can work out **17½% of 240** in her head.
b) Work out **35% of 520**.
- 2) You can make different colours of paint by mixing red, blue and yellow in different proportions. For example, you can make green by mixing **1 part blue** to **1 part yellow**.
- a) To make purple, you mix **3 parts red** to **7 parts blue**.
How much of each colour do you need to make **20 litres** of purple paint?
- b) To make orange, you mix **13 parts yellow** to **7 parts red**.
How much of each colour do you need to make **10 litres** of orange paint?
- 3) The table shows the land area of each of the worlds continents.

| continent | land area (in 1000 km ²) |
|---------------|--------------------------------------|
| Africa | 30 264 |
| Antarctica | 13 209 |
| Asia | 44 250 |
| Europe | 9 907 |
| North America | 24 398 |
| Oceania | 8 534 |
| South America | 17 793 |
| World | 148 355 |

- a) Which continent is approximately 12% of the World's land area?
b) What percentage of the World's land area is **Antarctica**?
c) About **30%** of the World's area is **land**. The rest is water.
The amount of **land** in the world is about **150 million km²**.

Work out the approximate **total area** (land and water) of the world.

- 4) The cost of an old toy vehicle depends on its condition and whether it is in its original box.

| Condition | Value |
|-------------------------------|-------|
| excellent and in its box | 100% |
| good, and in its box | 85% |
| poor, and in its box | 50% |
| excellent, but not in its box | 65% |
| good, but not in its box | 32% |
| poor, but not in its box | 15% |

A Mail Van in excellent condition, and in its box, costs **£125**.

- a) How much is a Mail Van in **good** condition, and in its box?
b) How much is a Mail Van in **good** condition, **but not in its box**?

- c) A Petrol Tanker in excellent condition, and in its box, costs £152.
 Another petrol tanker should be sold for £98.80.
 Using the chart above, what is its condition and does it have its box?

- 5) The table shows some information about pupils in a school.

| | left-handed | right-handed |
|-------|-------------|--------------|
| girls | 32 | 180 |
| boys | 28 | 168 |

There are **408 pupils** in the school.

- a) What **percentage** of the pupils are **boys**?
 b) What is the **ratio** of **left-handed** pupils to **right-handed** pupils?
 Write your ratio in the form 1 :

- 6) a) At a sports centre, people take part in one of five different sports.
 This table shows the percentage of people who played badminton, football and squash on Friday.

Altogether 260 people played the different sports on Friday.

- i) Work out how many people played badminton.
 ii) Work out how many people played football.
 iii) Work out how many people played squash.

| Friday | |
|-----------|-----|
| Badminton | 10% |
| Football | 40% |
| Squash | 5% |

- b) Altogether **260** people played the different sports on **Friday** and
700 people played the different sports on **Saturday**.

40% of the people played football on **Friday**,
 but only **20%** of the people played football on **Saturday**.

Mike said: "40% is more than 20%, so more people played football on Friday."
 Explain why Mike is **wrong**.

- 7) As part of a school project, Jane carried out a survey into the favourite colour of each member of her school year. The results are displayed in the table.

| RED | BLUE | GREEN | YELLOW |
|-----|------|-------|--------|
| 15 | 25 | 40 | 15 |

- a) Copy and complete the line to show the ratios. **RED : BLUE : GREEN : YELLOW**
3 : : :
- b) What percentage of Jane's school year chose BLUE as their favourite colour?
- c) Jane repeated the survey with the same 95 pupils some six months later and found that:
 the same number of children favoured RED,
 some 20% more children favoured BLUE,
 some $37\frac{1}{2}\%$ less children favoured GREEN,
 the remainder favoured YELLOW.

Copy and complete the line below to show the ratios for the second survey.

RED : BLUE : GREEN : YELLOW
3 : : :

ANSWERS.

1) b) 182.

2) a) 6 red : 14 blue, b) 6.5 yellow : 3.5 red.

3) a) South America, b) 8.9%, c) 500 million km².

4) a) £106.25, b) £40, c) excellent, but not in its box.

5) a) 48.04%, b) 1 : 5.8.

6) a) i) 26, ii) 104, iii) 13, b) Friday = 104 people, Saturday = 140 people. More played on Saturday.

7) a) 3 : 5 : 8 : 3, b) 26.3%, c) 3 : 6 : 5 : 5.