

GCSE (9-1) Mathematics
J560/05 Paper 5 (Higher Tier)

Question Set 1

1. (a) Simplify fully.

$$\frac{3a^8 \times 2a^5}{a^2}$$

(a) [3]

(b) Solve.

$$\frac{6x - 10}{5} = 1$$

(b) $x =$ [3]

2. (a) A sunflower grows at a rate of 4 cm each day.

How many days does it take to grow from a height of 80 cm to more than 1.06 m?

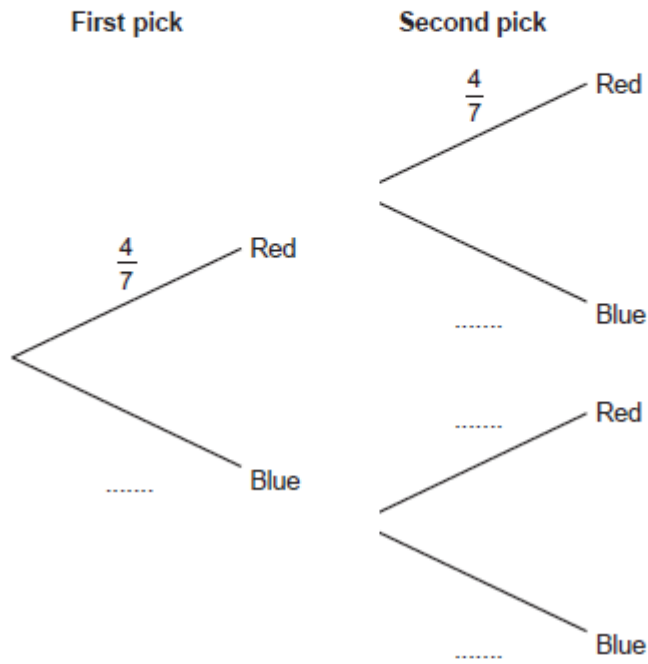
(a) [3]

(b) If the sunflower grows at a faster rate, how would this affect your answer to part (a)?

..... [1]

3. A bag contains 4 red counters and 3 blue counters only.
 Jack picks a counter at random and then replaces it.
 Jack then picks a second counter at random.

(a) Complete the tree diagram.



[2]

(b) Work out the probability that Jack picks two red counters.

(b) [2]

4. Mrs Mills buys 4 packs of treats for her cats, Fluff and Tigger.

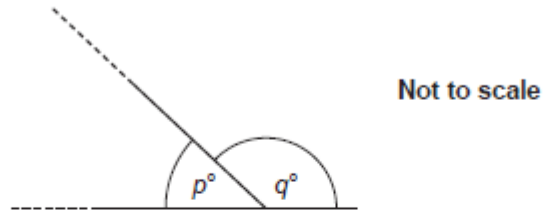
She gives Fluff $\frac{1}{6}$ of a pack each day.

She gives Tigger $\frac{1}{5}$ of a pack each day.

For how many complete days will the 4 packs of treats last?

..... [5]

5. An interior angle of an isosceles triangle is p° and an exterior angle is q° .



It is given that $q = 5p$.

- (a) Write the ratio $p : q$ in its simplest form.

(a) : [2]

- (b) Work out the two different possible sets of angles for the isosceles triangle.

(b) Triangle 1: $^\circ$, $^\circ$, $^\circ$

Triangle 2: $^\circ$, $^\circ$, $^\circ$

[4]

6. (a) Write $\frac{1}{6}$ as a recurring decimal.

$$\frac{1}{6} \times 15 = \frac{15}{6 \times 15} = \frac{15}{90} = \frac{16-1}{90} \Rightarrow 1.6 \Rightarrow \boxed{0.1\dot{6}}$$

or
$$6 \overline{) 10} \begin{array}{r} 0.1 \\ 6 \end{array}$$

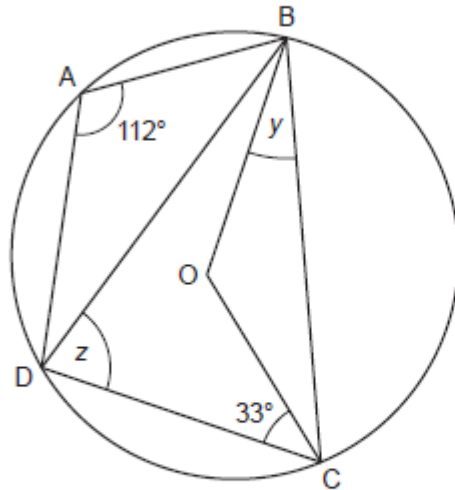
(a) [2]

- (b) Elsa divides a two-digit number by another two-digit number. She gets the answer 0.15.

She says that there is only one possible pair of numbers that will give this answer. Is she correct? Show how you decide.

..... [4]

7. A, B, C and D are points on the circumference of a circle, centre O.
 Angle $BAD = 112^\circ$ and angle $DCO = 33^\circ$.



Not to scale

- (a) Show that angle $y = 35^\circ$.
 Give reasons for each stage of your working.

[4]

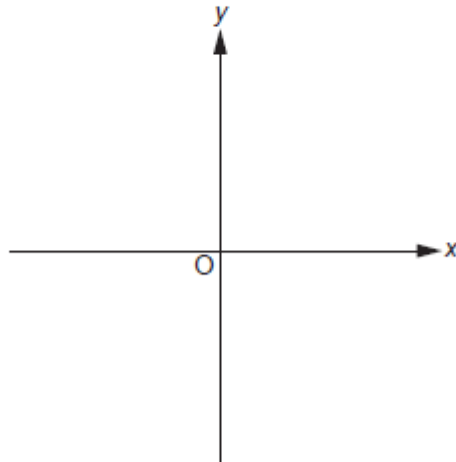
- (b) Work out angle z .
 Give reasons for your answer.

Angle $z = \dots\dots\dots^\circ$ because $\dots\dots\dots$
 $\dots\dots\dots$
 $\dots\dots\dots$ [3]

8. (a) Write $x^2 + 8x + 3$ in the form $(x + a)^2 - b$.

(a) [3]

(b) Sketch the graph of $y = x^2 + 8x + 3$.
Show clearly the coordinates of any turning points and the y -intercept.



[4]

9. 21 people travelled to a meeting.

- 12 used a train.
- 6 used a car.
- 7 did not use a train or a car.
- Some used a train and a car.

Two people are chosen at random from those who used a train.

Find the probability that both these people also used a car.

..... [6]

Total Marks for Question Set 1: 51

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