Problem Solving with Ratios www.m4ths.com

Section 1

(1) Samir and Katie share £40 in the ratio 3:5. How much money do they each get?

(2) Samir and Katie share some money in the ratio 3:5. Katie has £40. How much does Samir get?

(3) Samir and Katie share some money in the ratio 3:5.
Katie has £40 more than Samir.
How much money does Samir get?

(4) Sand is divided into two piles in the ratio 9:4.
Given that the larger pile is 80kg heavier than the smaller pile, what is the weight of the smaller pile?

40kg 90kg 64kg 20kg

Section 2

(1) In a sports club there are 90 members.
Half of the members are children.
The rest of the members are either adults or OAPs.
The ratio of adults to OAPs is 4:5
How many adults are there in the club?

(2) There are 120 people on a school trip. Some of the people are teachers and the rest are students in either Year 10 or Year 11.
10% of the people on the trip are teachers and the rest are students in either Year 10 or 11.
The ratio of Year 10s to Year 11s is 1:3. How many more Year 11s were there than Year 10s on the trip?

(3) Ahmed, Ben and Cathy share some money in the ratio 2:3:6.
Cathy has £12 more than Ben.
How much does Ahmed have?

(4) Jane bakes some cookies. ¼ of the cookies are chocolate flavour and the rest are blueberry flavour.
What is the ratio of chocolate flavour to blueberry flavour cookies?

(5) 40% of students in a school own an iPhone.
The rest of the students don't.
What is the ratio of students owning iPhones to students not owning iPhones?
Give your answer in its simplest form.

(6) Which of the following options is the same as the ratio $m:n$?

$1:m+n$ $1:\frac{n}{m}$ $mn:1$ $1:1$

(7) Karim has 20 counters in a bag. He says he shared all the 20 counters in the ratio 1:6.
(a) Show that he is not correct.
(b) What is the least number of counters he could remove from the bag to be able to share them all in the ratio 1:6?

(8) There are between 50 and 60 nuggets in a box. All of the nuggets in the box are shared out.
The nuggets are shared in the ratio 3:4
How many nuggets are in the smaller share?

(9) There are less than 40 sweets in a box.
All of sweets are shared out. The sweets are shared in the ratio 3:1.
What is the maximum number of sweets that could be in the larger share?

(10) In a survey students were asked if they bought their lunch from the canteen or took a lunch box instead. The ratio of students who bought their lunch from the canteen to those bringing a lunch box was 4:1. If a pie chart is drawn to show this information, how many degrees would be needed to represent the sector showing people who bought their lunch from the canteen?

(11) The ratio of $M : N$ is $2 : 5$
$M + N = 56$
Find the value of $M - N$.

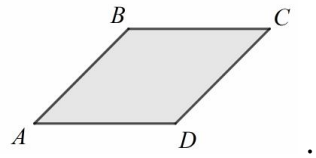
Section 3

(1) The sizes of the angles in an isosceles triangle are in the ratio 2:5:5.
What is the size of the smallest angle in the triangle?

(2) The sizes of the angles in a different isosceles triangle are in the ratio $1:7:x$
What are the possible values of x?

(3) An equilateral triangle has side lengths A, B and C.
Write down the ratio of the size of the side lengths of A to B to C.

(4) The diagram below shows a parallelogram.
The ratio of the size of angle A to the size of angle B is 1:3.
Work out the size of angle D.



(5) The ratio of the length of the line OA to the length of the line OB is 3:1.
Use the line in the diagram below to show where points A and B **could** lie on the line.

(6) The area of a rectangle is $72cm^2$. The ratio of the side lengths of the rectangle is 2:1.
Find (a) The dimensions of the rectangle and (b) The perimeter of the rectangle.

(7) Write down the ratio of the size of each interior angle to each exterior angle of a regular hexagon.
Give your answer in its simplest form.

Section 4

(1) The ratio of dogs to frogs is 3:7. The ratio of frogs to cats is 4:9. What is the ratio of dogs to cats?

(2) Simplify the ratio $a : a^2 : a^3$

(3) The point (p, q) lies on the line $y = 3x$
Given that p and q are positive, find the ratio $p : q$.

(4) Show that the ratio $x + 2 : x^2 + x - 2$ could be written as $1 : x - 1$