Corbett maths

Ratio: Problem Solving
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Examples

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Question 1:   The table below shows information about the number of medals won by
6 countries in the 2016 Olympic Games.

Country	Gold	Silver	Bronze	Total
Spain	7	4	6	17
France	10	18	14	42
Germany	17	10	15	42
Italy	8	12	8	28
Japan	12	8	21	41
Australia	8	11	10	29

(a) Write down the ratio of the total number of medals won by Italy to
the total number of medals won by France.
Give your answer in its simplest form.

(b) Write down the ratio of the total number of gold medals won to the
total number of bronze medals won.
Give your answer in its simplest form.

Question 2:   There are between 30 and 40 sweets in a bag.
Ben and Daisy share the sweets in the ratio 4:5.
There are no sweets remaining in the bag.

How many sweets were in the bag to begin with?

Question 3:   George buys some first class and second class stamps to put on some letters.
Each first class stamp costs 67p
Each second class stamp costs 58p
The ratio of first class stamps to second class stamps that he buys is 1:4
George bought 20 stamps.

How much did the stamps cost George?

Question 4:   1,935 people visit a library during one week.
The ratio children : adults is 1 : 4
How many more adults than children visited the library?

Question 5:   The sizes of the interior angles of a triangle are in the ratio 1:3:8
              Calculate the difference in size between the largest and smallest angles.

Question 6:   Mr Rodgers is organising a trip to a football match for 84 children.
              The ratio of teachers on the trip to children on the trip is 1:6
              Each bus holds 30 passengers.
              Show four buses are needed.

Question 7:   Isaac and Victoria share money in the ratio 2:5
              Victoria receives £6.60
              Work out the difference between how much money Isaac and Victoria receive.

Question 8:   Charlotte and Melissa booked theatre tickets costing £180.
              They have a voucher that entitles them to 20% off the total price.
              Charlotte and Melissa share the total cost of the tickets in the ratio 5:7.

              Work out how much more Melissa pays than Charlotte.

Question 9:   Barnaby has 288 counters in a bag.
              The counters are red, yellow and white.

              $\frac{3}{8}$ of the counters are red.

              The other counters are yellow and white in the ratio 1:4

              Work out how many counters of each colour there are.

Question 10: The sizes of the interior angles of a pentagon are in the ratio   1:2:5:5:7
              Calculate the size of the largest

Question 11: Jack is 10 years old.
              Kylie is 17 years old.
              Vanessa is 23 years old.
              Kylie and Vanessa share £16 in the ratio of their ages.
              Kylie gives 20% of her share to Jack.
              Vanessa gives a quarter of her share to Jack.
              How much money does Jack receive?

Question 12: Two numbers are in the ratio 3:7
              One of the numbers is 42
              There are two possible values for the other number.
              What are the two possible values?

Question 13: Alex is 12 years older than George.
              Carl is three times older than Alex
              The sum of their ages is 68
              Find the ratio of George's age to Carl's age to Alex's age.

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Question 14: Felicity has two boxes of counters, each with an equal ratio of black and white beads.
In box A, 54 of the beads of black and 36 are white.
There are 162 white beads in box B.

How many beads are there in the two boxes in total?

Question 15: Sophie is making 400 scones.
She uses butter, sugar and flour in the ratio 2:1:9
Here are the costs of those ingredients.

Butter	£2.20 per 500g
Sugar	£1.60 per kilogram
Flour	60p per 1.5kg

The total mass of the butter, sugar and flour in each scone is 30g

Work out the total cost of these ingredients for the 400 scones.

Question 16: Copper costs £5 per kilogram.
Zinc costs £3.20 per kilogram.
Copper and zinc are mixed in the ratio 4:1 to make brass.

Work out the cost of 7 kilograms of brass.

Question 17: Geraint has 2p and 50p coins in the ratio 20 : 3

Write the ratio of the value of the 2p coins to the value of 50p coins in its simplest form.

Question 18: Mrs Chambers is organising a school trip to a museum for year 7 and year 8.
She needs to work out the total cost of the museum tickets and bus hire.
The table below shows the museum ticket prices.

Visitor Age	Price
0 - 3	free
4 - 12	£4.50
13 - 17	£6.50
18+	£11.50

Each bus has 51 seats and costs £125

Altogether 300 students want to go on the trip.
The ratio of the number of students to the number of teachers is 25:1
The ratio of the number of students in year 7 to the number of students in year 8 is 8:7

At the time of the trip, all of the students in year 7 are 11 or 12 years old.
Of year 8 students, the ratio of number of 12 year olds to 13 year olds is 2:3.
Work out the total price of the school trip.

Question 19: Alannah, Colin and Hannah visit the park and collect conkers and acorns.

In total they collect the same number of conkers and acorns.

Alannah, Colin and Hannah collect conkers in the ratio 4:7:9
Alannah, Colin and Hannah collect acorns in the ratio 3:1:5

(a) Did Hannah collect more conkers or acorns?

(b) What is the lowest possible number of conkers they could have collected?

Question 20: A bag contains red, yellow and blue beads.

The ratio of red beads to yellow beads is 2:3
The ratio of yellow beads to blue beads is 5:4

Work out what fraction of the beads are red.

Question 21: In a box

the number of blue counters and the number green counters are in the ratio 7:4
the number of green counters and the number of red counters are in the ratio 3:1

The total number of counters in the bag is 444.

How many green counters are in the bag?

Question 22: The ratio of the red cards to black cards in a deck is 3:10
2 more red cards are added to the deck.
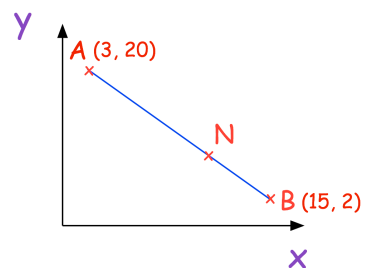The ratio of red cards to black cards is now 1:3

Work out the number of black cards in the deck.

Question 23: A is the point with coordinates (3, 20)
B is the point with coordinates (15, 2)
N is a point of the line AB such that AN : NB = 2 : 1

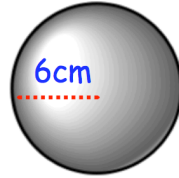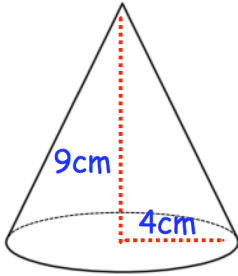Find the coordinates of the point N.

Question 24: Bag A contains 5x coins.
Bag B contains 3x coins.
8 coins are taken from Bag B and put into Bag A
The ratio of coins in Bag A to Bag B is now 11:5

Work out the total number of coins.

Question 25: A cone has radius 4cm and perpendicular height of 9cm.
A sphere has a radius of 6cm

Volume of a sphere	$\frac{4}{3}\pi r^3$
Volume of a cone	$\frac{1}{3}\pi r^2 h$

Calculate the ratio of the volume of the cone to the volume of the sphere.

Question 26: On 1st March 2001, the ratio of Freddie's age to his mother's age was 1:11
On 1st March 2018, the ratio of Freddie's age to his mother's age was 2:5
Write the ratio of Freddie's age to his mother's age on 1st March 2030

Question 27: The ratio 25 000 000 000 : 500 can be written in the for $n : 1$
Work out the value of n

Give your answer in standard form

Question 28: The distance of Mercury from the Sun is 5.7×10^7 km
The distance of Neptune from the Sun is 4.3×10^9 km

Work out the ratio of the distance of Mercury from the Sun to the distance
of Neptune from the Sun.

Question 29: Class 10D make some cakes using milk chocolate, dark chocolate or white
chocolate.
Some of the cakes contain nuts and the rest do not.

The ratio of the number of milk chocolate cakes to dark chocolate cakes is 10:3
The ratio of the number of white chocolate cakes to milk chocolate cakes is 1:6

Of the milk chocolate cakes, the ratio of the number of cakes containing nuts to
not containing nuts is 1:8

Of the dark chocolate cakes, the ratio of the number of cakes containing nuts to
not containing nuts is 3:2

Of the white chocolate cakes, the ratio of the number of cakes containing nuts to
not containing nuts is 2:5

What percentage of the cakes contain nuts?

Answers

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