Answer the questions

(1) Jennifer gets a salary of 12000 while David gets $8400 more per month. What is the ratio of the salaries of Jennifer and David?

(2) Fill in the blanks

______:46::192:552

(3) Donald is 16 years old, and his neighbor Betty is 24 years old. What will the ratio of their ages be in 10 years?

(4) Your school has 270 teachers and 8085 students. What is the ratio of teachers to students in your school?

(5) What are the means of the proportion 28:60::196:420?

Choose correct answer(s) from given choice

(6) If the weight of 12 boxes of sweets is 39.6 kg then the weight of 35 boxes in kilograms is:
   a. 75.9
   b. 155.1
   c. 56.1
   d. 115.5

(7) Carol runs around the park 3 times and covers a distance of 5.85 km. The next day she runs 7.8 more km than she had the previous day. How many rounds of the park did she take on the second day?
   a. 10
   b. 7
   c. 4
   d. 5

(8) If 13 pieces of thread can be tied together to form a thread that is 72.15 meters long, then how many pieces are needed to make a thread that is 183.15 meters long?
   a. 20
   b. 14
   c. 46
   d. 33

(9) Given the proportion 27:45::45:75, the mean proportion is:
   a. 52
   b. 27
   c. 45
   d. 75

(10) A sloth has traveled at the same speed for 22 days and has covered a distance of 484 meters. If it travels 4 more days, then the total distance (in meters) it would additionally cover is:
   a. 93
   b. 484
   c. 88
   d. 572
(11) A motorcycle can travel 490 km in 7 hours. The distance it can cover in 24 hours is:
   a. 1750  
   b. 2170  
   c. 1610  
   d. 1680

Fill in the blanks

(12) If the width of a rectangle is 32 cms long, and the perimeter of the rectangle is 1.72 meters, then
    the ratio of the width of the rectangle to its length is _____ : _____

(13) Sandra gets 24 days as holidays in 2008. The ratio of holidays she gets to the number of
    working days is _____ : _____.

(14) Carol and Helen started a competition to see who can collect the most number of stamps. At
    the end of one month, the ratio of the stamps Carol had to those that Helen had was 79:86. Helen
    then collected 360 stamps in one day and the ratio then became 79:98. The number of
    stamps that Carol now has is _______

(15) If you were asked to divide $1120 into three shares proportional to 6, 7 and 3, then what is the
    value of the largest share is $ ______
Answers

(1) 10:17

Step 1
Jennifer's salary = $12000

Step 2
It is given that David gets $8400 more per month than Jennifer, therefore David's salary = 12000 + 8400 = $20400

Step 3
The fraction of the salaries of Jennifer and David = \[\frac{12000}{20400} = \frac{10}{17}\]

Step 4
Therefore the ratio of the salaries of Jennifer and David = 10:17

(2) 16

Step 1
Let's assume the value of blank is \(x\).

Step 2
\(x:46::192:552\) can be written as:

\[
\frac{x}{46} = \frac{192}{552}
\]

by cross multiplying both sides

\[552x = 46 \times 192\]

\[\Rightarrow x = \frac{46 \times 192}{552}\]

\[\Rightarrow x = 16\]

Step 3
Therefore the value of blank is 16.
Step 1
The present age of Donald is 16 years, therefore the age of Donald after 10 years = 16 + 10
= 26 years

Step 2
The present age of Betty is 24 years, therefore the age of Betty after 10 years = 24 + 10
= 34 years

Step 3
The fraction of their ages after 10 years = \( \frac{26}{34} = \frac{13}{17} \)

Step 4
Therefore the ratio of their ages after 10 years = 13:17

Step 1
Number of teachers in the school = 270
Number of students in the school = 8085

Step 2
The fraction of teachers to students in your school = \( \frac{270}{8085} = \frac{18}{539} \)

Step 3
Therefore the ratio of teachers to students in your school = 18:539

Step 1
28:60::196:420 can be written as \( \frac{28}{60} = \frac{196}{420} \)

Step 2
The four parts of the proportion are separated into two groups, the means and the extremes, based on their arrangement in the proportion. Reading from left-to-right and top-to-bottom, the means are the second and third numbers. Remembering that mean is a type of average may help you remember that the means of a proportion are in the middle when reading left-to-right, top-to-bottom.

Step 3
Therefore the means of the proportion are 60,196
(6) d. 115.5

Step 1
The weight of 12 boxes of sweets = 39.6 kg
or, the weight of 1 box of sweets = \( \frac{39.6}{12} \) = 3.3 kg

Step 2
Therefore, the weight of 35 boxes of sweets = 3.3 \times 35 = 115.5 \text{ kg}

(7) b. 7

Step 1
The number of rounds of park covered in 5.85 km = 3
Or, the number of rounds of the park covered in 1 km = \( \frac{3}{5.85} \)

Step 2
The next day she runs 7.8 more km than she did on the previous day. Therefore distance covered by her on the next day = 5.85 + 7.8 = 13.65 km
Therefore the number of rounds of the park covered by her in 13.65 km = \( \frac{3}{5.85} \times 13.65 = 7 \)

(8) d. 33

Number of segments needed to make 72.15 meter long thread = 13
or the number of segments needed to make 1 meter long thread = \( \frac{13}{72.15} \)

Therefore the number of segments needed to make 183.15 meter long thread = \( \frac{13}{72.15} \times 183.15 = 33 \)
**Step 1**

27:45:45:75 can be written as \( \frac{27}{45} = \frac{45}{75} \)

**Step 2**

The four parts of the proportion are separated into two groups, the means and the extremes, based on their arrangement in the proportion. Reading from left-to-right, the mean terms are the second and third numbers.

**Step 3**

For cases where second and third terms are same, the middle terms are called the mean proportion between first and fourth terms.

**Step 4**

Therefore the mean proportion is 45

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**Step 1**

It is given that, a sloth has covered a distance of 484 meters in 22 days. and we know that Speed = \( \frac{\text{Distance}}{\text{Time}} \)

Therefore the speed = \( \frac{\text{Distance traveled}}{\text{Number of days}} = \frac{484}{22} = 22 \) meters per day

**Step 2**

We know that Distance = Speed × Time

Therefore the total distance traveled by it in 4 days = Speed × Time = 22 × 4 = 88 meters

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**Step 1**

Motorcycle can travel 490 km in 7 hours.

Speed = \( \frac{\text{Distance}}{\text{Time}} \)

\[ = \frac{490}{7} \]

= 70 km per hour

**Step 2**

Because we know that Distance = Speed × Time

Therefore motorcycle can cover distance in 24 hours = Speed × Time = 70 × 24 = 1680 km
Step 1
The width of a rectangle = 32 cms

The perimeter of the rectangle = 1.72 meters
since 1 meter = 100 cms
Therefore the perimeter of the rectangle in cms = 1.72 × 100 = 172 cms

Step 2
We know that the perimeter of the rectangle = 2(length + width)

Therefore the length of the rectangle is = \( \frac{\text{perimeter of the rectangle}}{2} - \text{width} \)

= \( \frac{172}{2} - 32 \)

= 86 - 32
= 54 cms

Step 3
The fraction of the width of the rectangle to its length = \( \frac{32}{54} = \frac{16}{27} \)

Step 4
Therefore the ratio of the width of the rectangle to its length = 16:27

Step 1
2012 is a leap year, as 2012 is divisible by 4.
Therefore number of days in 2012 = 366 days

Step 2
Number of holidays = 24 days
Therefore the number of working days = number of days in 2008 - number of holidays
= 366 - 24
= 342 days

Step 3
The fraction of holidays to the number of working days = \( \frac{24}{342} \)

Step 4
On dividing both numerator and denominator by 6,
the ratio of holidays to the number of working days = 4:57
Step 1
The ratio of the stamps collected by Kazuhito and Hinata at the end of the month was 79:86. Let the number of total stamps collected by Kazuhito and Hinata by the end of the month be 79x and 86x respectively.

Step 2
Now, additional stamps collected by Helen in one day = 360. This means, the new number of Hinata’s stamps = 86x + 360.

Step 3
On equating new ratios,

\[
\frac{79x}{86x + 360} = \frac{79}{98}
\]

\[
\Rightarrow \frac{79x}{86x + 360} = \frac{79}{98}
\]

\[
\Rightarrow \frac{x}{86x + 360} = \frac{1}{98}
\]

\[
\Rightarrow 98x = 86x + 360
\]

\[
\Rightarrow 98x - 86x = 360
\]

\[
\Rightarrow (98 - 86)x = 360
\]

\[
\Rightarrow 12x = 360
\]

\[
\Rightarrow x = \frac{360}{12}
\]

\[
\Rightarrow x = 30
\]

Step 4
Stamps collected by Carol = 79x = 79 × 30 = 2370

Step 5
Therefore, the total number of stamps collected by the Carol is 2370.
Step 1
Let us assume that $x$ be the proportionality constant, $1120 \text{ is divided into three shares of } 6x, 7x \text{ and } 3x$

Step 2
Therefore $6x + 7x + 3x = 1120$

$\Rightarrow 16x = 1120$

$\Rightarrow x = \frac{1120}{16}$

$\Rightarrow x = 70$

Step 3
Therefore all the three shares,

$6x = 6 \times 70 = 420$

$7x = 7 \times 70 = 490$

$3x = 3 \times 70 = 210$

Step 4
If you compare all the three shares, you will notice that the value of the largest share is $490$. 