

- 1 A train travelling 300 kilometres per hour is 240 kilometres from the station at 9:45 AM.

At what time will it arrive at the station?

- A 10:18 AM
- B 10:23 AM
- C 10:33 AM
- D 10:48 AM
- E 10:53 AM

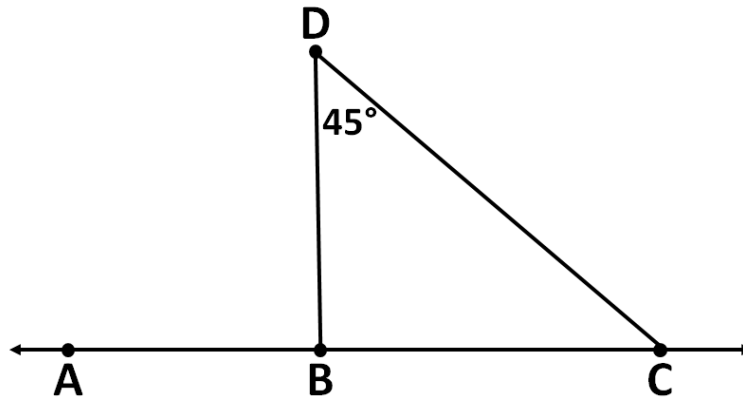


- 2 A machine, working at a constant rate, can make 15 widgets in an hour.

How many widgets can three such machines, each working at the same constant rate, make in 12 minutes?

- A 3 widgets
- B 4 widgets
- C 6 widgets
- D 8 widgets
- E 9 widgets

3



In the figure above, **A**, **B**, and **C** form a straight line.

The degree measure of angle **BDC** is  $45^\circ$ .

Which of the following best estimates the degree measure of angle **ABD**?

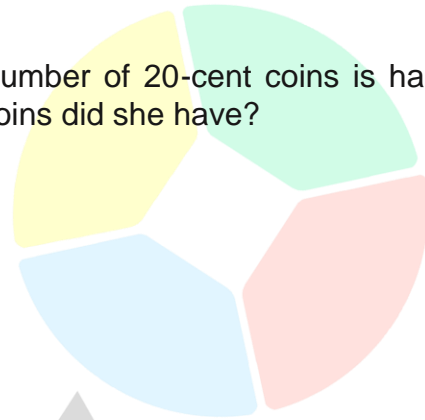
- A** Less than 45 degrees
- B** Exactly 45 degrees
- C** Greater than 45 degrees
- D** Exactly 90 degrees
- E** Greater than 90 degrees

- 4 Beth only had 5-cent coins, 10-cent coins, and 20-cent coins in her purse.

The total value of the coins she had is \$3.50.

If Beth had 35 coins in her purse, and the number of 20-cent coins is half the number of 10-cent coins, how many 20-cent coins did she have?

- A 3
- B 5
- C 14
- D 7
- E 20



- 5 Arnold drove his car from Green Valley at 8:20 AM and arrived at Blue Ridge at 1:50 PM.

If he averaged 30 kilometres per hour and had to stop one hour for lunch, how far is Green Valley from Blue Ridge?

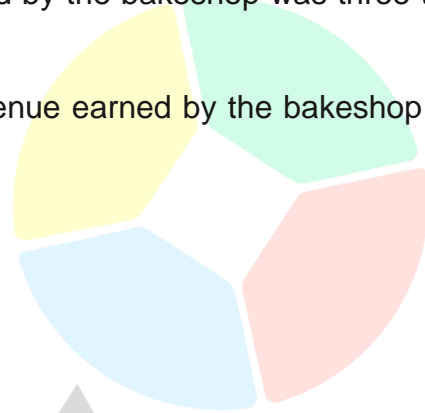
- A 120 kilometres
- B 135 kilometres
- C 150 kilometres
- D 165 kilometres
- E 180 kilometres

- 6 A bakeshop sells donuts for \$6 each and brownies for \$10 each.

On a certain day, the number of brownies sold by the bakeshop was three times the number of donuts sold.

Which of the following could **NOT** be the revenue earned by the bakeshop from the sale of donuts and brownies on that day?

- A \$108
- B \$288
- C \$360
- D \$438
- E \$612



- 7 The number of bacteria in a certain culture was 3 000 at the start of the experiment.

If the number of bacteria in the culture was 12 000 by the end of the experiment, by how many percentages did the number of bacteria increase?

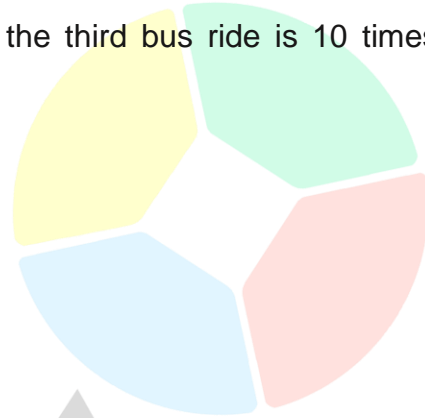
- A 3 percent
- B 25 percent
- C 125 percent
- D 300 percent
- E 400 percent

- 8 Alfred needs to take three bus rides and travel a total of 225 km to visit his grandmother's place.

The first bus ride is 5 kilometres long while the third bus ride is 10 times the distance of the second bus ride.

How many kilometres is the second bus ride?

- A 20 kilometres
- B 22 kilometres
- C 25 kilometres
- D 28 kilometres
- E 30 kilometres



- 9 George took five tests last week.

His average (arithmetic mean) score on the first four tests was 92.

When the result of the fifth test came out, his average score dropped to 90.

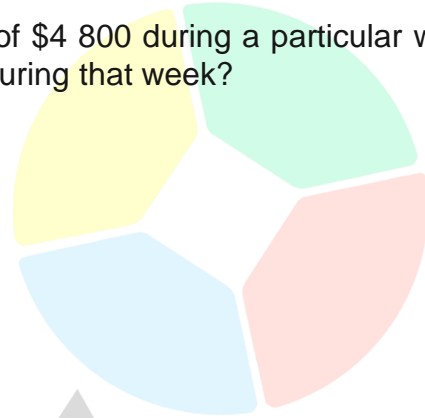
What was George's score on the fifth test?

- A 80
- B 82
- C 84
- D 86
- E 88

- 10** Aries works as a sales agent and earns a weekly salary of \$1 000 plus a 10 percent commission on all his sales for the week.

If Aries wants to have a total weekly income of \$4 800 during a particular week, what must be the amount of sales he makes during that week?

- A** \$3 800
- B** \$4 800
- C** \$19 000
- D** \$38 000
- E** \$48 000



- 11** Twelve teams qualified to participate in the National Super Quiz Bee Championship.

Each team has a roster of students in the ratio of 2 boys for every 3 girls.

If each team has a total of 25 students on their roster, the number of girls that will participate at the National Super Quiz Bee Championship is how many more than the number of boys?

- A** 10
- B** 15
- C** 60
- D** 120
- E** 180

- 12 During the mall sale, Cecile bought a toaster for \$68 at a 20 percent discount from the regular price.

What was the regular price of the toaster?

- A \$75.00
- B \$80.00
- C \$82.00
- D \$84.00
- E \$85.00



- 13 A carpenter cuts a sheet of plywood into three pieces.

The first piece is four times as long as the second piece and the second piece is four times as long as the third piece.

What fraction of the sheet of plywood is the smallest piece?

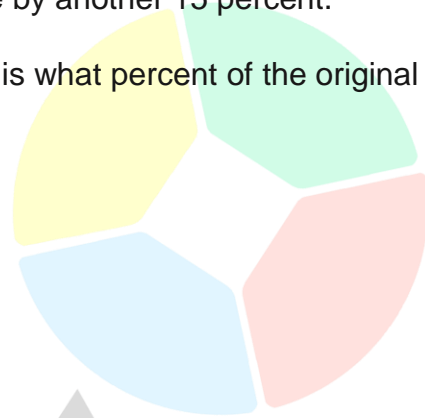
- A  $\frac{1}{24}$
- B  $\frac{1}{21}$
- C  $\frac{1}{20}$
- D  $\frac{1}{16}$
- E  $\frac{1}{8}$

14 Last week, a music store increased the original price of headphones by 20 percent.

This week, the music store increased the price by another 15 percent.

The current price increase of the headphones is what percent of the original price of the headphones?

- A 20 percent
- B 35 percent
- C 38 percent
- D 65 percent
- E 135 percent



15 The lions at the zoo eat 40 kilograms of meat during a 7-day week.

How many kilograms of meat will the lions eat in 10 days?

- A  $27\frac{1}{7}$  kilograms
- B  $28\frac{1}{7}$  kilograms
- C  $57\frac{1}{7}$  kilograms
- D  $58\frac{1}{7}$  kilograms
- E 400 kilograms



16 What fraction of an hour has elapsed between 11:58 AM and 12:22 PM?

- A  $\frac{2}{5}$  of an hour
- B  $\frac{7}{30}$  of an hour
- C  $\frac{17}{30}$  of an hour
- D  $\frac{1}{6}$  of an hour
- E  $\frac{1}{4}$  of an hour



17 {24, 30, 33}

Which of the following is equal to the sum of the arithmetic mean, median, and range of the set above?

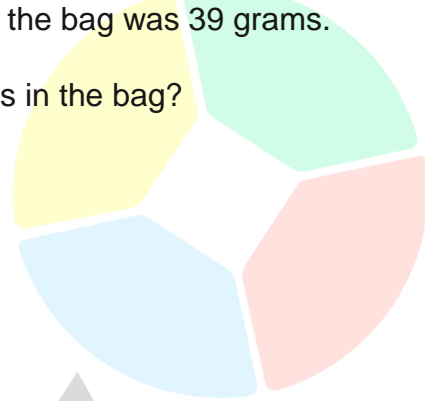
- A 29
- B 30
- C 36
- D 68
- E 72

- 18** A bag contains 10 copper balls and 40 iron balls only.

The average (arithmetic mean) mass of all the copper balls in the bag was 35 grams and the average mass of all the balls in the bag was 39 grams.

What was the average mass of all the iron balls in the bag?

- A 40 grams
- B 43 grams
- C 47 grams
- D 51 grams
- E 55 grams



- 19** A train, heading south from the North station, begins its journey at the same time that a train, heading north from the South station, begins its journey.

One train is travelling at 14 kilometres per hour and the other train is travelling at 16 kilometres per hour.

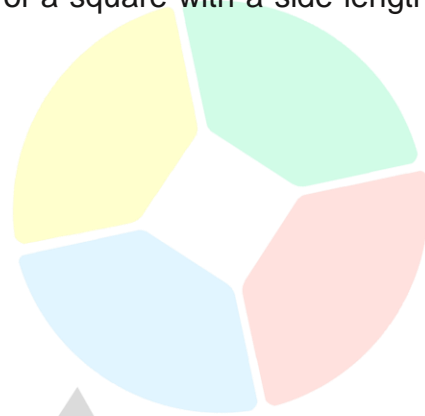
If the distance between the North station and the South station is 45 kilometres, and the trains are travelling on parallel tracks, how many hours after they begin their journey will the two trains meet?

- A 1 hour
- B 1.2 hours
- C 1.25 hours
- D 1.35 hours
- E 1.5 hours

20 The base of a triangle is 8 centimetres long.

If the area of the triangle is equal to the area of a square with a side length of 8 centimetres, what is the height of the triangle?

- A 20 centimetres
- B 16 centimetres
- C 12 centimetres
- D 10 centimetres
- E 8 centimetres



21 The number of bacteria in a certain culture during the first hour of the experiment was 20 percent greater than the number of bacteria at the last hour of the experiment.

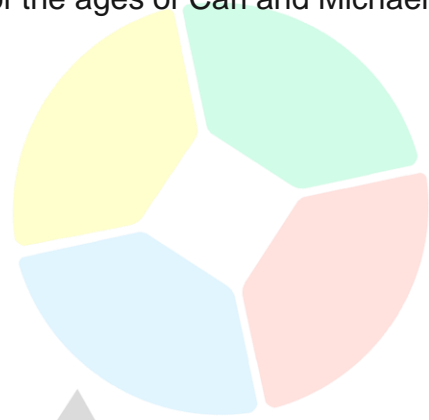
If there were 1 146 bacteria in the culture in the first hour of the experiment, how many bacteria were there at the last hour of the experiment?

- A 884
- B 916
- C 955
- D 982
- E 1 012

**22** The average (arithmetic mean) of the ages of Carl, Michael, and Ruben is 13.

If Ruben is 17 years old, what is the average of the ages of Carl and Michael?

- A** 14
- B** 13
- C** 12
- D** 11
- E** 10

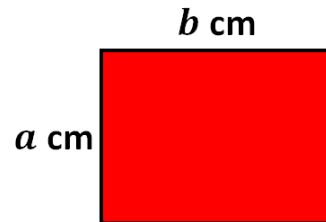
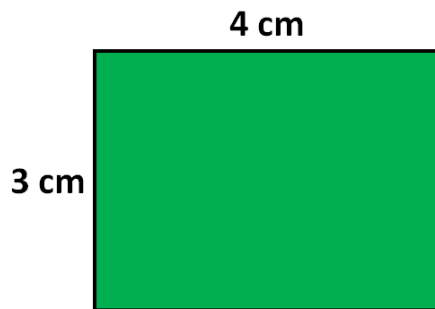


**23** The total surface area of a cube is 54 square centimetres.

What is the volume of the cube?

- A** 27 cubic centimetres
- B** 36 cubic centimetres
- C** 54 cubic centimetres
- D** 72 cubic centimetres
- E** 81 cubic centimetres

24 The figures below are two rectangles.



The ratio of the length of the shorter side of the green rectangle to the length of the shorter side of the red rectangle is  $\frac{3}{2}$ .

The ratio of the length of the longer side of the green rectangle to the length of the longer side of the red rectangle is  $\frac{3}{2}$ .

What is the ratio of the area of the green rectangle to the area of the red rectangle?

A  $\frac{3}{2}$

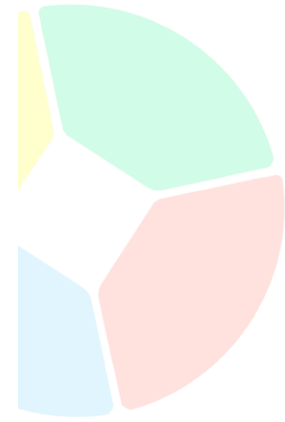
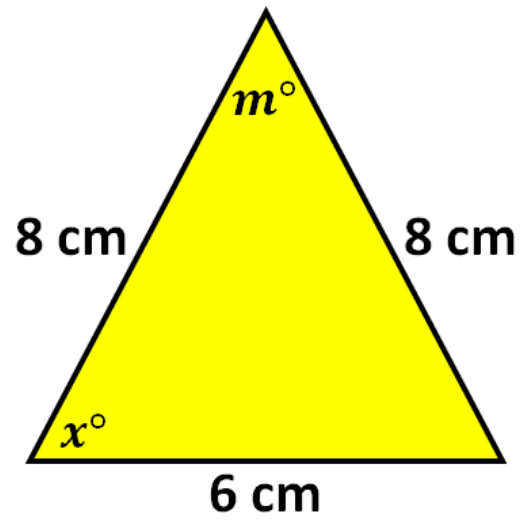
B  $\frac{3}{4}$

C  $\frac{9}{2}$

D  $\frac{9}{4}$

E It cannot be determined.

25 The figure below is an isosceles triangle.



Which of the following gives the value of  $x$  in terms of  $m$ ?

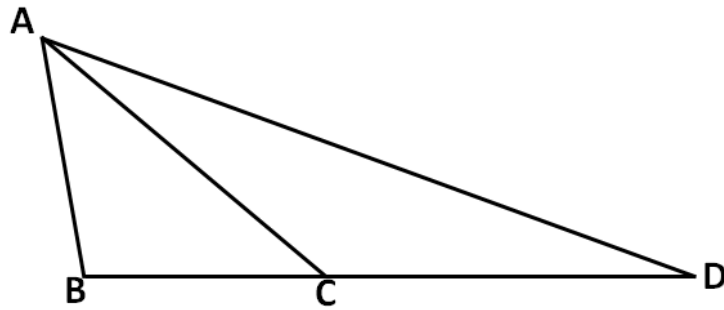
A  $180 - m$

B  $90 - m$

C  $180 - 2m$

D  $180 - \frac{m}{2}$

E  $90 - \frac{m}{2}$



In the figure above, the length of **AB** is equal to the length of  $BC$  and the length of **AC** is equal to the length of **CD**.

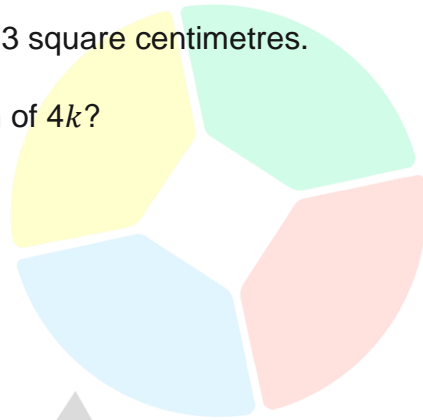
If the degree measure of angle  $ABC$  is  $120^\circ$ , what is the degree measure of angle **ADC**?

- A 15 degrees
  - B 20 degrees
  - C 25 degrees
  - D 30 degrees
  - E 35 degrees
- 27 The degree measures of the interior angles of a triangle are in the ratio of 1:2:3. Which of the following best describes the triangle?
- A An acute triangle
  - B An isosceles triangle
  - C An obtuse triangle
  - D A right triangle
  - E An equilateral triangle

28 The area of a square with a side length of  $k$  is 3 square centimetres.

What is the area of a square with a side length of  $4k$ ?

- A 12 square centimetres
- B 16 square centimetres
- C 24 square centimetres
- D 36 square centimetres
- E 48 square centimetres



29 A trail mix snack calls for  $2\frac{3}{4}$  cups of almonds,  $1\frac{1}{2}$  cups of pecans,  $2\frac{1}{3}$  cups of raisins, and  $\frac{1}{4}$  of a cup of dried cherries.

What is the ratio of the total number of cups of nuts (almonds and pecans) to the total number of cups of dried fruits (raisins and dried cherries) the recipe requires?

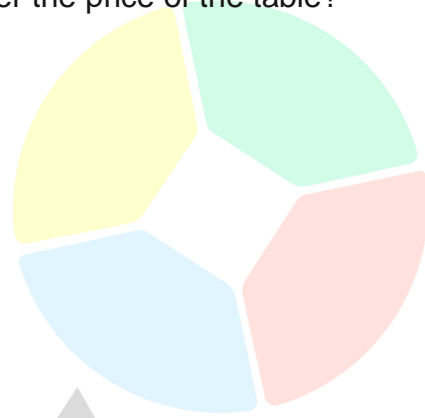
- A 51 to 31
- B 31 to 12
- C 31 to 17
- D 31 to 51
- E 12 to 31



30 A furniture shop lowered the price of a table from \$80 to \$60.

By what percentage did the furniture shop lower the price of the table?

- A 25 percent
- B  $33\frac{1}{3}$  percent
- C 35 percent
- D  $66\frac{2}{3}$  percent
- E 75 percent



31 A chef's specialty is a two-ingredient buttercream frosting consisting of butter and sugar mixed in a 3 to 8 ratio, respectively.

How many grams of butter did the chef use to make a 110-gram buttercream frosting?

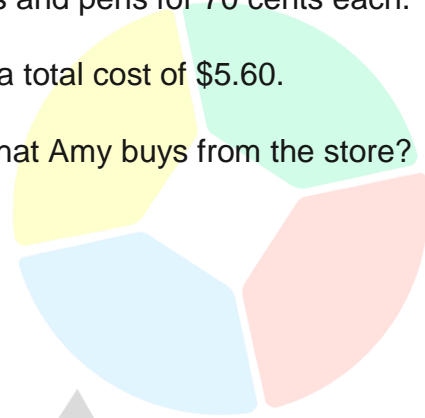
- A 10 grams
- B 16 grams
- C 30 grams
- D 60 grams
- E 80 grams

**32** A school supply store sells pencils for 50 cents and pens for 70 cents each.

Amy buys pencils and pens from the store for a total cost of \$5.60.

What is the total number of pencils and pens that Amy buys from the store?

- A** 7
- B** 8
- C** 9
- D** 10
- E** 11



**33** An electric generator consumes  $3\frac{3}{8}$  litres of petrol every 15 hours.

How many litres of petrol does the electric generator consume per day?

- A** 0.225 litres per day
- B** 1.6 litres per day
- C** 4.8 litres per day
- D** 5.2 litres per day
- E** 5.4 litres per day

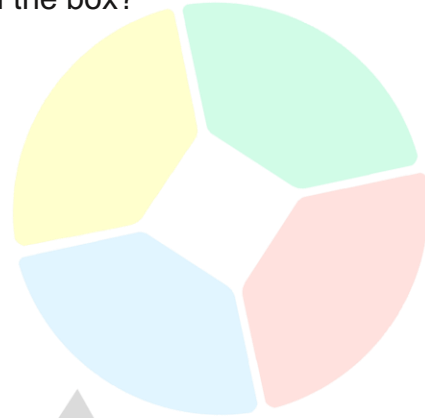
**34** A box only contains 8 red ribbons and 12 yellow ribbons.

The average (arithmetic mean) length of all the red ribbons in the box is 12.75 metres.

The average length of all the yellow ribbons in the box is 15.25 metres.

What is the average length of all the ribbons in the box?

- A 13 metres
- B 13.25 metres
- C 14 metres
- D 14.25 metres
- E 15 metres



35 The perimeter of the rectangle below is 10 centimetres.

$$\frac{12}{k} \text{ cm}$$

$$\frac{8}{k} \text{ cm}$$



What is the area of the rectangle?

- A 6 square centimetres
- B 8 square centimetres
- C 10 square centimetres

D 12 square centimetres

E 16 square centimetres

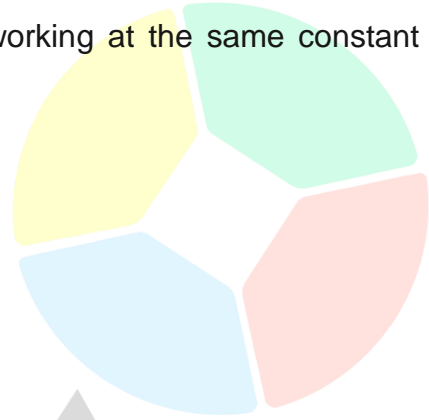


Scholarly

- 36** Four identical machines, working at the same constant rate, can make a total of 110 pencils every 30 seconds.

How many pencils can 10 such machines, working at the same constant rate, make in 5 minutes?

- A** 512 pencils
- B** 2 200 pencils
- C** 2 750 pencils
- D** 11 000 pencils
- E** 44 000 pencils



- 37** The sum of the ages of Phoebe and Piper is less than the age of Paige.

Phoebe is 2 years younger than Paige and Piper is 20 years younger than Paige.

Which of the following could be Paige's age?

- A** 21 years old
- B** 22 years old
- C** 23 years old
- D** 24 years old
- E** 25 years old

- 38** Two cars leave the parking lot at the same time.

One of the cars heads directly north of the parking lot at a constant speed of 70 kilometres per hour.

The other car heads directly south of the parking lot at a constant speed of 60 kilometres per hour.

If the two cars continue at their respective speeds without stopping, how much time will it take for the two cars to be 715 kilometres apart?

- A** 2 hours 45 minutes
- B** 3 hours 30 minutes
- C** 4 hours 15 minutes
- D** 4 hours 45 minutes
- E** 5 hours 30 minutes

- 39** One copier, working at a constant rate, can print 100 000 000 copies in 8 hours.

How many hours will it take four such copiers, each working at the same constant rate, to print 100 000 000 copies?

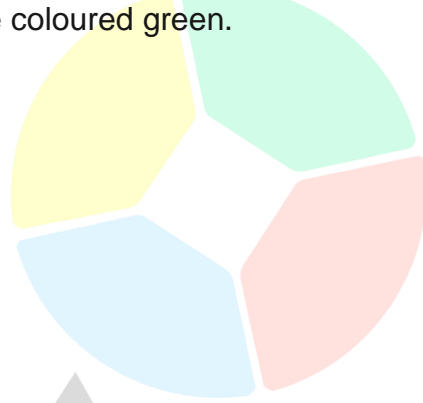
- A** 2 hours
- B** 4 hours
- C** 8 hours
- D** 16 hours
- E** 32 hours

40 Ninety percent of all the balls in the jar are coloured.

Of the coloured balls in the jar, 50 percent are coloured red, 40 percent are coloured blue, and the remaining 360 balls are coloured green.

What is the total number of balls in the jar?

- A 2 916 balls
- B 3 240 balls
- C 3 600 balls
- D 4 000 balls
- E 8 000 balls



Scholarly