1. Each day, a baker makes a total of 1 350 donuts, muffins, and bagels in the ratio of 5:3:1, respectively.
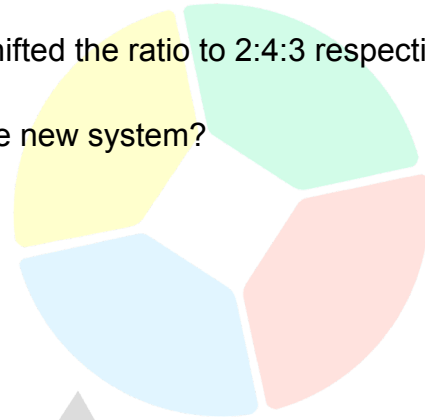
Realizing that muffins and bagels sell the most, he shifted the ratio to 2:4:3 respectively.

How many more bagels did the baker make under the new system?

A. 90
B. 150
C. 270
D. 300
E. 450

2. Emma walks an average of 500 meters in 12 minutes.

Terry walks 15 percent less than Emma at the same time on average.

How fast does Terry walk in kilometers per hour?

A. 2.125 kilometers per hour
B. 2.5 kilometers per hour
C. 2.275 kilometers per hour
D. 3.2 kilometers per hour
E. 3.5 kilometers per hour

3. Two angles of a parallelogram have a sum of 120°.

What is the average (arithmetic mean) of the degree measures of the other two angles of the parallelogram?

A. 60°
B. 80°
C. 100°
D. 120°
E. 240°

4. A coffee table book has two landscape pictures for every night sky picture, and there are seven underwater pictures in the book for every landscape picture.

What is the ratio of the number of underwater pictures to the number of landscape pictures to the number of night sky pictures in the coffee table book?

A. 7:2:1
B. 7:1:2
C. 14:7:2
D. 14:2:1
E. 12:2:7
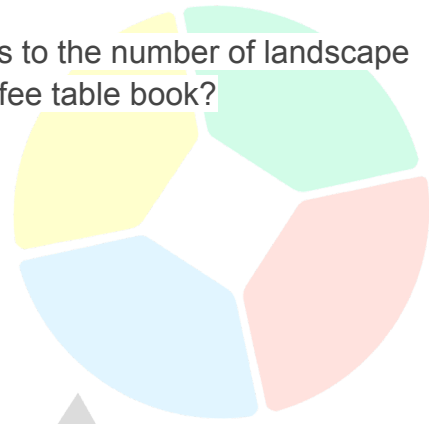
5. The shape of the stop sign below is a regular octagon.
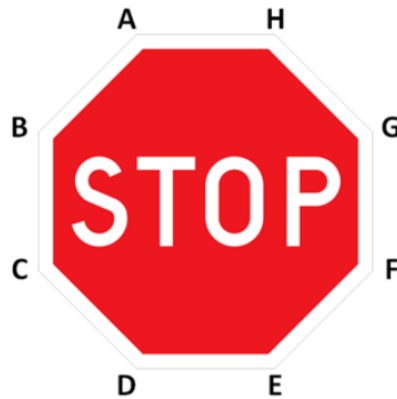
If the stop sign is rotated 225° in the counterclockwise direction, point A would be in the position of which point?

A. Point D
B. Point E
C. Point F
D. Point G
E. Point H

6. Of the two-digit positive integers less than 50, how many integers have different digits?

A. 36
B. 37
C. 38
D. 40
E. 42

7. The perimeter of a rectangle is 80 meters.

What is the area of the rectangle if the longer side of the rectangle is 4 meters longer than the shorter side?

A. 240 square meters
B. 396 square meters
C. 440 square meters
D. 640 square meters
E. 800 square meters

8. In 2010, the cost of hiring a plumber was $25 per hour.

In 2020, the cost of hiring the same plumber is $48 per hour.

The hourly cost of hiring the plumber has increased by what percent between 2010 and 2020?
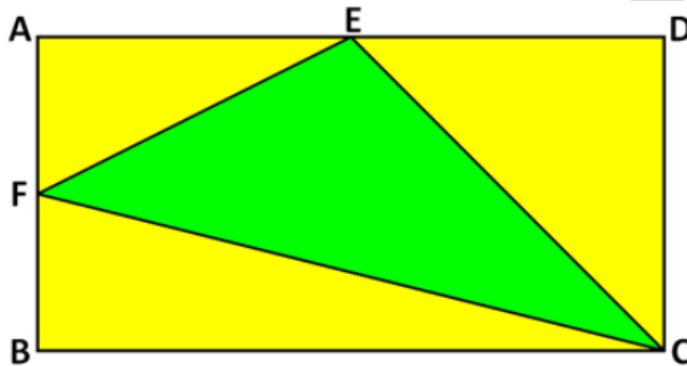
A. 48%
B. 52%
C. 92%
D. 152%
E. 192%

9. Last month, a theme park sold exactly 1 000 tickets, 550 of which are adult tickets and the remainder are children tickets.

If each adult ticket costs $30 and each children ticket costs $20, what fraction of the money made from ticket sales came from the sale of adult tickets?

A. 33/49
B. 11/17
C. 27/49
D. 6/17
E. 16/49
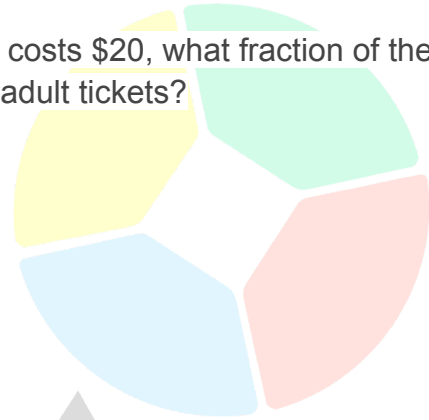
10.

In the figure above, **ABCD** is a rectangle.

E and **F** are midpoints of sides **AD** and **AB**, respectively.

What is the ratio of the yellow region to the area of the green region?

A. 8 to 3
B. 5 to 4
C. 5 to 3
D. 4 to 3
E. 3 to 5

11. Ruby used 50 percent of her inheritance money to buy a house, 20 percent to buy a car, 15 percent to buy some gadgets, and put the remaining $37 500 on investments.

How much was Ruby's inheritance money?

A. $100 000
B. $125 000
C. $175 000
D. $250 000
E. $375 000

12. Tim, working alone, can build the brick wall in 15 days.

Carl, working alone, can build the same brick wall in 20 days.

If they both work together for 4 days building the brick wall, what fraction of the brick wall do they still need to finish?

A. ¼
B. ⅕
C. 1/10
D. 7/15
E. 8/15

**13.** A chain of 15 restaurants averages 600 customers per restaurant per day.

If 6 of the restaurants close down but the total number of customers stays the same, what is the average number of customers per restaurant per day among the remaining restaurants?

A. 500
B. 750
C. 1 000
D. 1 200
E. 1 500

14. The product of two positive integers is an odd number.

Which of the following statements must be true?

A. The sum of the two integers is an odd number.
B. The difference between the two integers is an odd number.
C. The square of either integer is an odd number.
D. The sum of the squares of the two integers is an odd number.
E. The difference between the squares of the two integers is an odd number.
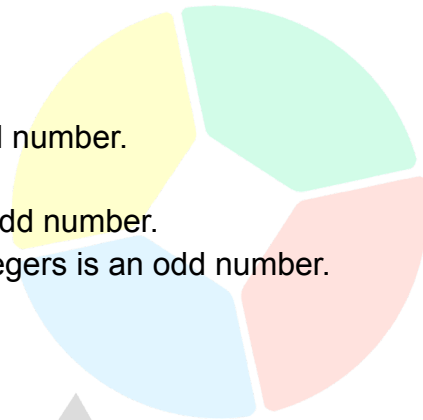
15. If Hubert has 7 fewer tokens, he will have half as many tokens as Bernard has.

Together, they both have 343 tokens.

How many tokens does Hubert have?

A. 107 tokens
B. 119 tokens
C. 127 tokens
D. 133 tokens
E. 143 tokens

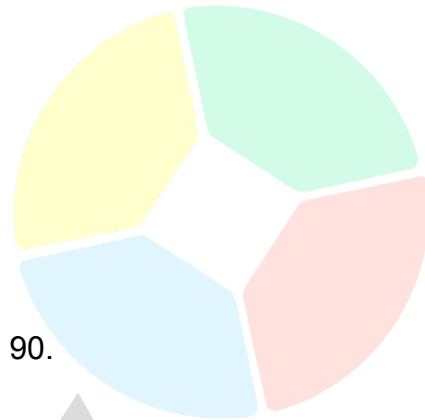**16.** Jones was 25 years old six years ago.

How old will he be four years from today?

A. 29 years old
B. 30 years old
C. 31 years old
D. 33 years old
E. 35 years old

17. If 30 percent of 300 is 10 percent of **N**, what value is **N**?

A. 900
B. 600
C. 300
D. 200
E. 100

18. The average (arithmetic mean) of five numbers is 90.

If the average of four of those numbers is 85, what is the value of the fifth number?

A. 5
B. 85
C. 90
D. 110
E. 150

19. A jar only contains 14 black balls and 23 white balls.

How many white balls must be removed from the jar so that 70 percent of the balls in the jar are black?

A. 3
B. 6
C. 14
D. 17
E. 20

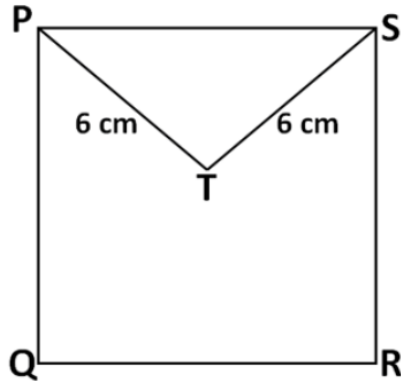**20.** If 5 liters of water were added to a water container that is already ¾ full, then the water container would be ⅞ full.

How many liters of water would the water container hold if it were full?

A. 25 liters
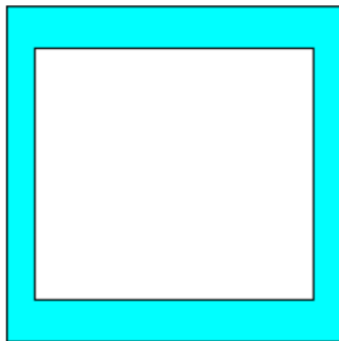B. 40 liters

C. 64 liters
D. 80 liters
E. 96 liters

21.

In the figure above, **PQRS** is a square.

If the perimeter of triangle **PTS** is 17 centimeters, what is the area of square **PQRS**?

A. 20 square meters
B. 25 square meters
C. 30 square meters
D. 36 square meters
E. 40 square meters

22.

The figure above shows a rectangle inside a square.

The rectangle has an area of 48 square centimeters and is surrounded by a margin that is 3 centimeters wide on two sides and 2 centimeters wide on the other two sides.

What is the area of the colored region of the square?

A. 6 square centimeters
B. 12 square centimeters
C. 48 square centimeters
D. 96 square centimeters
E. 144 square centimeters
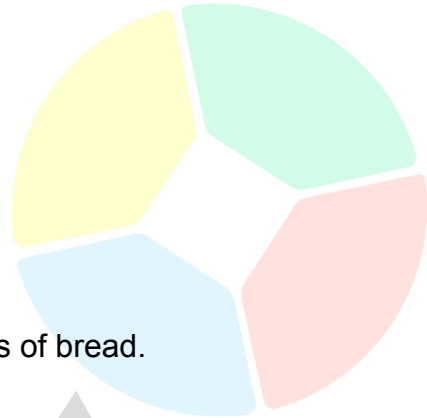
23. A baker wants to earn $75 from selling 300 loaves of bread.

It costs 65 cents each to make each of the first 100 loaves of bread and 55 cents each to make each loaf after the first 100 loaves.

What price should the baker charge for the 300 loaves of bread?

A. $75
B. $175
C. $225
D. $240
E. $250

24. A bee flew the entire 90 kilometers from the bee farm to the flower garden.

The bee traveled the first 18 kilometers of the journey at a constant rate of 36 kilometers per hour and the remaining part of the journey at a constant rate of 72 kilometers per hour.

What was the average speed of the flight of the bee on the entire journey?

A. 30 kilometers per hour
B. 36 kilometers per hour
C. 45 kilometers per hour
D. 48 kilometers per hour
E. 60 kilometers per hour

25. William and Denver are standing on opposite sides of a field that is 900 meters long.

William runs towards Denver at a constant pace of 10 meters per second while Denver runs toward William at a constant pace of 15 meters per second.

If they both begin running towards one another, at the same time, how many seconds will it take for them to meet?

A. 25 seconds
B. 36 seconds
C. 48 seconds
D. 60 seconds
E. 72 seconds

26. The wall is 24 meters high and 15 meters wide.

The wall has a 3-meter wide margin at the top and the bottom, and a 2-meter wide margin on the left and the right side.

What is the total area occupied by the margins on the wall?

A. 138 square meters
B. 162 square meters
C. 180 square meters
D. 186 square meters
E. 198 square meters

27. Fifty students are enrolled in Miss Anderson's class.

Of the students enrolled in her class, 90 percent took the qualifying test.

If ⅔ of the students who took the qualifying test passed, how many students passed the qualifying test?

A. 30 students
B. 33 students
C. 34 students
D. 35 students
E. 45 students
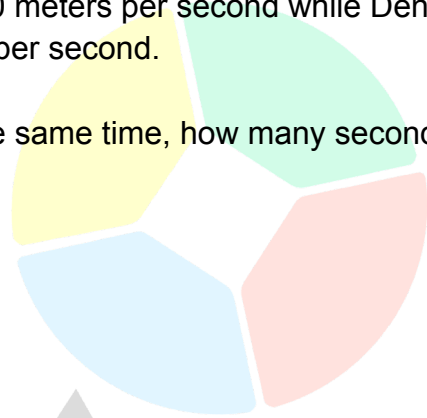
28. The area of a rectangle is equal to the area of the square.

Which of the following is equal to the perimeter of the rectangle?

A. One-half of the perimeter of the square
B. The perimeter of the square
C. Twice the perimeter of the square.
D. The square root of the perimeter of the square
E. None of the above.
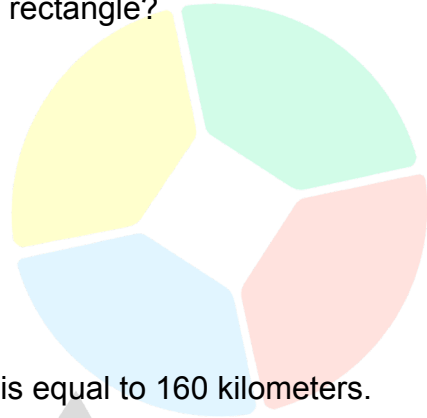
29. The scale on the map shows that one centimeter is equal to 160 kilometers.

If City A is 23/8 centimeters from City B on the map, how many kilometers is it from City A to City B?

A. 460 kilometers
B. 360 kilometers
C. 300 kilometers
D. 27 kilometers
E. 3 kilometers

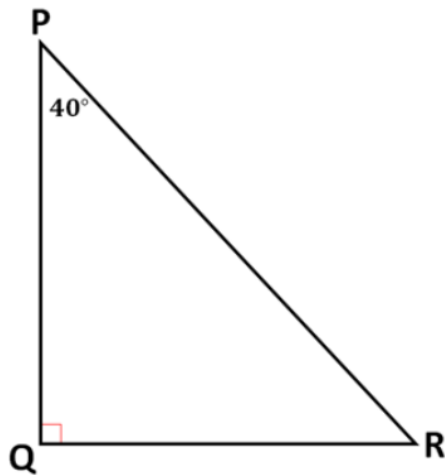**30**. A box contains 12 iron balls and 7 rubber balls.

Each iron ball weighs 1.1 kilograms and each rubber ball weighs 0.2 kilograms.

The box and its contents together weigh 16.25 kilograms.

How much does the empty box weigh?

A. 1.2 kilograms
B. 1.65 kilograms
C. 2.75 kilograms
D. 6.15 kilograms
E. 16 kilograms

31.

Based on the figure above, which of the following must be true?

A. **PR < PQ**
B. **PR < QR**
C. **PQ + QR < PR**
D. **PQ < QR**
E. **QR < PQ**

32. The ratio of **S** to **T** is 2 to 5.

What is the ratio of **T - S** to **S + T**?

A. 1 to 1
B. 2 to 5
C. 3 to 7
D. 5 to 2
E. 7 to 3

33. The number of boys among the Junior classes is 3/5 the number of boys among the Senior classes.

If the total number of boys among the Junior and Senior classes is 240, what is the difference between the number of boys among the Junior classes and the number of boys among the Senior classes

A. 60

B. 90
C. 120
D. 150
E. 240

34. Kenji, working alone, can finish the task in 10 hours.

Marcus, working alone, can finish the same task in 15 hours.

They started working on the task together but unfortunately, Kenji had to leave after some time and Marcus finished the remaining task in 5 hours.

After how many hours since the two of them started working on the task did Kenji leave?
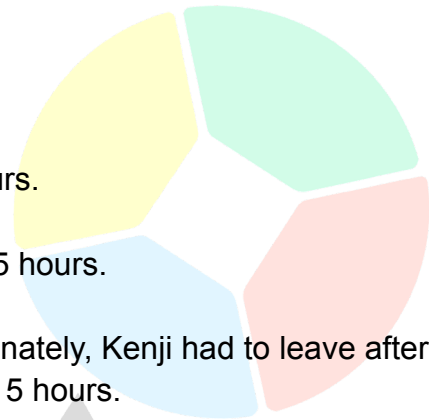
A. 4 hours
B. 5 hours
C. 6 hours
D. 7 hours
E. 8 hours

35. A supermarket sells apples for 12 cents a piece and oranges for 8 cents a piece.

On a certain day, the supermarket sold 350 apples and oranges for a total revenue of $33.20.

How many more oranges than apples did the supermarket sell that day?

A. 90
B. 110
C. 120
D. 130
E. 220