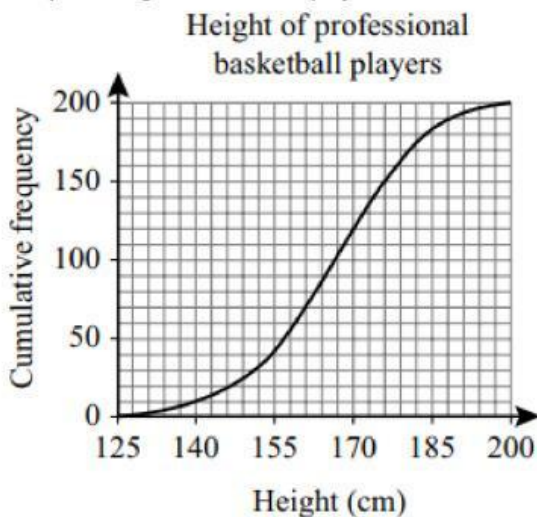


1. Which of the following equation represents the sentence below:

Three times the sum of a number and five is 120.

- A)  $3(x + 5) = 120$   
 B)  $3x - 5 = 120$   
 C)  $3x + 5 = 120$   
 D)  $3(x - 5) = 120$

2. This cumulative frequency curve shows the height in centimetres of 200 professional basketball players.  
 What percentage of basketball players are over 1.88 m tall?



- A) 0.5%  
 B) 5%  
 C) 95%  
 D) 10%

3. Below is a grouped frequency table showing the height (in centimetres) of 120 students in Year 10.

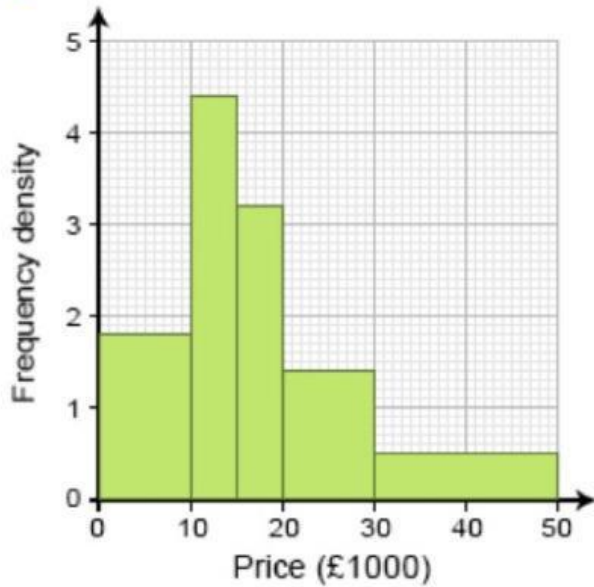
Calculate the missing frequency.

| Height (cm)        | Frequency | Cumulative Frequency |
|--------------------|-----------|----------------------|
| $120 < h \leq 130$ | 19        | 19                   |
| $130 < h \leq 140$ | 28        | 47                   |
| $140 < h \leq 150$ | 57        | 104                  |
| $150 < h \leq 160$ |           | 116                  |
| $160 < h \leq 170$ | 4         | 120                  |

- A) 28  
 B) 69  
 C) 12  
 D) 59

4. Six litres of white paint are mixed with three litres blue paint that cost \$2 per litre more. The total price of the mixture is \$24. Find the price of the white paint.

- A) \$2.4  
 B) \$5  
 C) \$2  
 D) \$4



The frequency of the interval  $\text{£}20\,000 < P \leq \text{£}30\,000$  is ...

- A) 14
- B) 1.4
- C) 140
- D) 0.14



What is the longest class interval for this data?

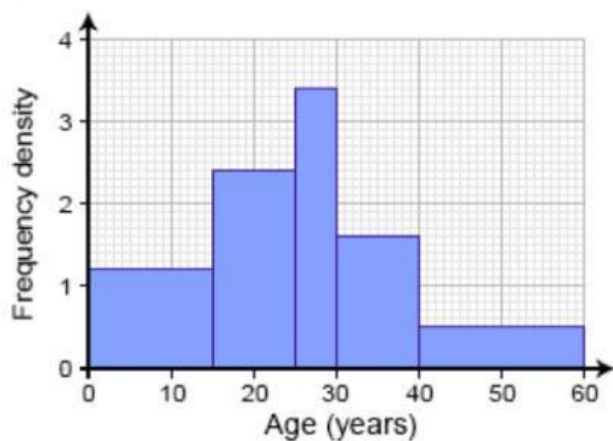
| Length in cm     | Frequency | Class width | Frequency density |
|------------------|-----------|-------------|-------------------|
| $0 < l \leq 10$  | 10        | a           |                   |
| $10 < l \leq 15$ | 18        | b           |                   |
| $15 < l \leq 30$ | 30        | c           |                   |
| $30 < l \leq 50$ | 22        | d           |                   |

- A) 18
- B) 20
- C) 30
- D) 15



Frequency density is: \_\_\_\_\_

- A) frequency  $\times$  class width
- B) frequency  $\div$  class width
- C) frequency  $+$  class width
- D) frequency  $-$  class width



The histogram shows the ages of the members of a tennis club.

The total of members of the club is ...

- A) 1
- B) 3
- C) 4
- D) 2



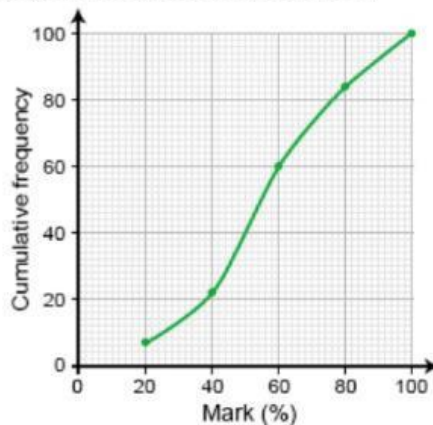
| Score ( $x$ ) | Frequency ( $f$ ) | Cumulative frequency ( $cf$ ) |
|---------------|-------------------|-------------------------------|
| 24            | 3                 | 3                             |
| 25            | 7                 | 10                            |
| 26            | 10                | 20                            |
| 27            | 5                 | 25                            |
| $\Sigma f =$  | 25                |                               |

How many scores were 26 or less?

- A) 20
- B) 25
- C) 3
- D) 10



The graph shows the results of a test.



How many students scored 40% or less on this test?

- A) 22
- B) 23
- C) 21
- D) 20

11.

A truck uses 20 liters of diesel to travel 240 kilometers. **How much diesel will it use to travel 180 km at the same rate?**

- A) 10 liters
- B) 12 liters
- C) 18 liters
- D) 15 liters

12.

Rahman and Dito share Rp 300.000,00 in the ratio 7 : 3.

How much money Rahman receives?

- A) Rp 210.000,00
- B) Rp 90.000,00
- C) Rp 150.000,00
- D) Rp 200.000,00

13. The people who work for the company are in the following age group

| Group A        | Group B        | Group C       |
|----------------|----------------|---------------|
| Under 30 years | 30 to 50 years | over 50 years |

The ratio of the number in group A to the number in group B is 9 : 10

The ratio of the number in group B to the number in group C is 5 : 3

If there are 48 people in group C, **what is the total of the people who work for the company?**

- A) 200
- B) 300
- C) 250
- D) 375

14. The scale on a map is 1 : 20.000. The area of the lake on the map is  $16\text{cm}^2$

**Calculate the actual area of the lake is ...  $\text{m}^2$**

- A) 3.200
- B) 6.400
- C) 320.000
- D) 640.000

15. A bag of N:P: K fertilizer contains nitrogen, phosphorus, and potassium in the ratio 2:3:5. **Work out the mass of potassium if the bags have 242kg total masses:**

- A) 48.4 kg
- B) 110 kg
- C) 121 kg
- D) 72.6 kg

16. A runner completes a 42 km marathon in 2 hours 30 minutes. **What was her average speed in km/h?**

- A) 42.8 km/h
- B) 16.8 km/h
- C) 1.4 km/h
- D) 84 km/h

17. The angles in a triangle are in the ratio 1 : 2 : 9. What is the size of the largest angle?

A) 150  
B) 30  
C) 135  
D) 75

18. Force ( $F$ ) is directly proportional to mass ( $m$ ). If acceleration is a constant ( $k$ ), which of the following equation that is **NOT TRUE**?

A)  $F = \frac{k}{m}$   
B)  $F = km$   
C)  $m = \frac{F}{k}$   
D)  $k = \frac{F}{m}$

19.  $y$  is inversely proportional to  $x$ .  
When  $x = 9$ ,  $y = 8$ .

What is the value of  $y$  when  $x = 6$

A) 16  
B) 14  
C) 10  
D) 12

20. Increase 8 g in the ratio 25 : 2.

A) 50  
B) 200  
C) 100  
D) 150

21. A bag of flour is increased in the ratio 13 : 5. The new bag weighs 1248 g.

What was the weight of the original bag in grams?

- A) 3245
- B) 96
- C) 480
- D) 1080

22. If a value is changed by the ratio 3 : 8, how will it change?

- A) It will be unchanged.
- B) it will first decrease, then increase
- C) It will decrease.
- D) It will increase.

23. When six is subtracted from a certain number, the result is 14.

What is the correct equation that represents the statement given in terms of  $x$ ?

- A)  $14 - x = 6$
- B)  $x - 6 = 14$
- C)  $6 - x = 14$
- D)  $6x - 14$

24. Given that  $z = \frac{2}{3}(2x + 3y)$ , solve this formula for  $x$

- A)  $x = \frac{z-2y}{3}$
- B)  $x = \frac{3z-6y}{4}$
- C)  $x = \frac{2y-z}{3}$
- D)  $x = \frac{6y-3z}{4}$

25. In physics, the kinetic energy ( $E$ ) of a particle can be found using the formula  $E = \frac{1}{2}mv^2$ , where  $m$  is the mass, and  $v$  is the velocity of the particle. **What the mass when  $E = 18 \text{ joule}$  and  $v = 1.5 \frac{m}{s}$ ?**

- A) 16 kg
- B) 8 kg
- C) 12 kg
- D) 6 kg

26. A cylinder which full of water. with volume of the water is  $50\pi$  litre. **What is the radius of the cylinder if the height is 2 meter? (volume of cylinder =  $\pi r^2 h$ )**

- A) 25
- B) 5
- C) 10
- D) 15

27. Beyza is 25 years younger than her father. Beyza's mother is two years younger than her father. Together Beyza, her mother, and her father have a combined age of 78. **Work out beyza's age.**

- A) 15
- B) 10
- C) 8
- D) 12

28. Find the inverse of  $f(x) = 2x - 5$

- A)  $f^{-1}(x) = \frac{x+5}{2}$
- B)  $f^{-1}(x) = \frac{x}{2} + 5$
- C)  $f^{-1}(x) = \frac{x}{2} - 5$
- D)  $f^{-1}(x) = \frac{x-5}{2}$



29. Given the functions  $f(x) = x^2 - 2x$  and  $g(x) = x + 1$ . Find the value of  $fg(2)$

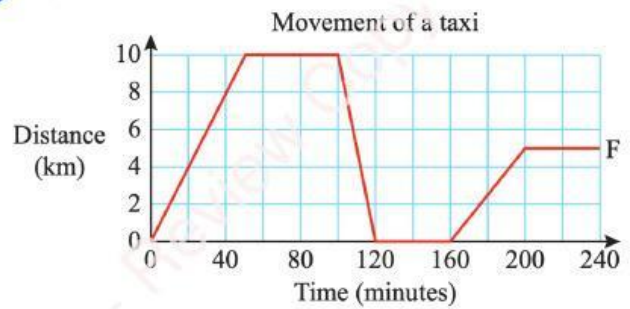
A) -2  
B) 3  
C) -3  
D) 2

30.  $f(z) = z^2 - 6z + 9$   
 $g(p) = \frac{1+p}{p-1}$

Find the value of  $fg(2)$ .

A) -1  
B) 2  
C) 1  
D) 0

31.

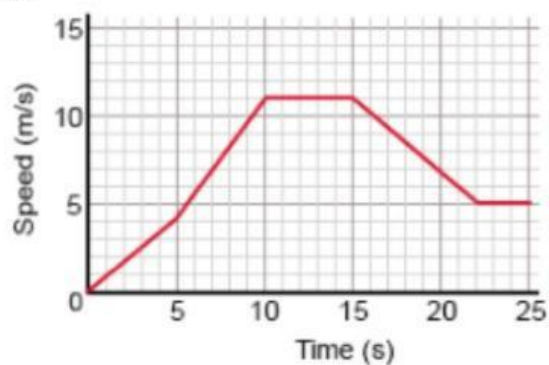


What is the average speed of the taxi from this graph?

A) 15.7 km/h  
B) 6.25 km/h  
C) 13.6 km/h  
D) 10.4 km/h

32.

A dog is trying to catch a ball thrown by its owner in the park. The diagram shows the speed-time graph for the dog.



The dog catches the ball after 10 seconds. **how many metres did the dog run before it caught the ball?**

A) 65 m  
B) 57.5 m  
C) 47.5 m  
D) 55 m



33. Given the function  $f(x) = 4x - 1$ . Find  $f(-1)$ .

- A)  $-5$
- B)  $3$
- C)  $5$
- D)  $-3$

34. Mike and Shane have 420 marbles between them. If Mike has five times as many marbles as Shane, **how many marbles does Shane have?**

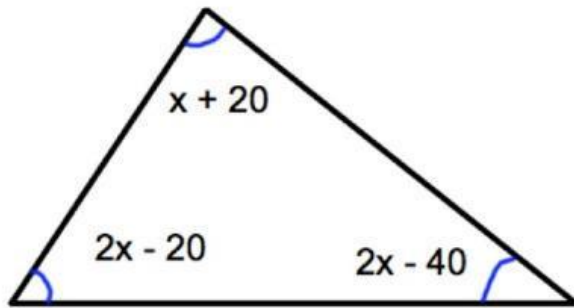
- A) 207
- B) 350
- C) 70
- D) 60

35. Riku walks at  $4.25 \text{ km/h}$ . **How far will he walk in four hours?**

- A)  $8.5 \text{ km}$
- B)  $17 \text{ km}$
- C)  $1.1 \text{ km}$
- D)  $21.25 \text{ km}$

36. The number of days to complete a research is inversely proportional to the number of researchers who are working.  
The research takes 125 days to complete if 16 people working on it.  
**Find how many people are needed to complete the research in 40 days.**

37. Shown is a triangle.



Work out the value of  $x$

39. Over the past 10 years, the population of a town has increase with ratio  $5 : 4$ . The population of the town 10 years ago was 20000. **What is the population of the town now?**

40. If  $f(x) = \frac{5}{2x+1}$  and  $f(x) = \frac{1}{3}$ . Find  $x$ .

38. Given a cumulative frequency of the basketball players as follows. Find the 74th percentile.

