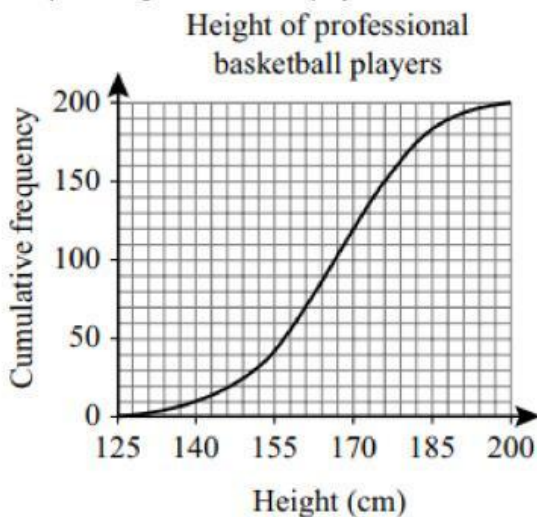**1.** Which of the following equation represents the sentence below:

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) $3(x - 5) = 120$

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

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

Height of professional basketball players

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

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

5
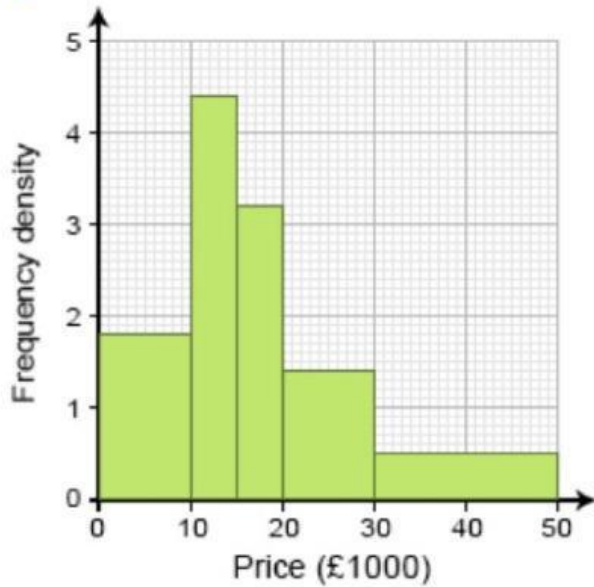
The frequency of the interval £20 000 < P ⩽ £30 000 is ...

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

What is the longest class interval for this data?

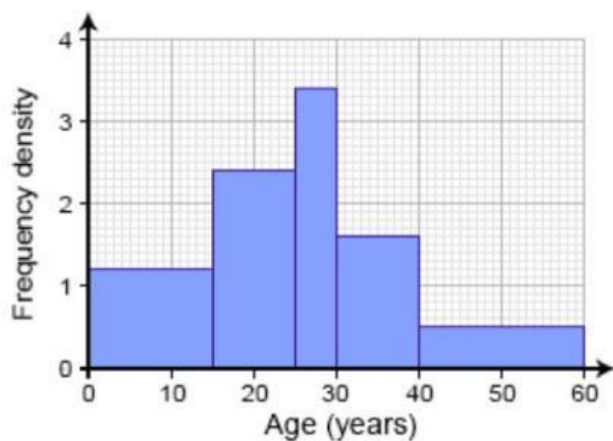| Length in cm	Frequency	Class width	Frequency density
0 < l ⩽ 10	10	a	
10 < l ⩽ 15	18	b	
15 < l ⩽ 30	30	c	
30 < l ⩽ 50	22	d	

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

Frequency density is:_____

A) frequency × class width
B) frequency ÷ class width
C) frequency + class width
D) frequency - class width

6

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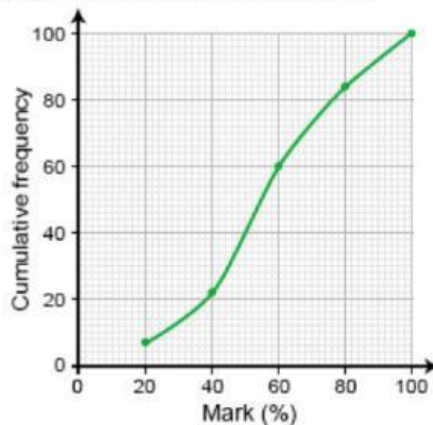The total of members of the club is ...

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

LIVEWORKSHEETS

9.

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

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 $16cm^2$

Calculate the actual area of the lake is ... 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

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) $6x - 14$

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.

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 physiscs, the kinetic energy (E) of a particle can be found using te formula $E = \frac{1}{2}mv^2$, where m is the mass, and v is the velocity of the particle. **What the mass when $E = 18 \; joule$ 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 50π 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 $fg(2)$
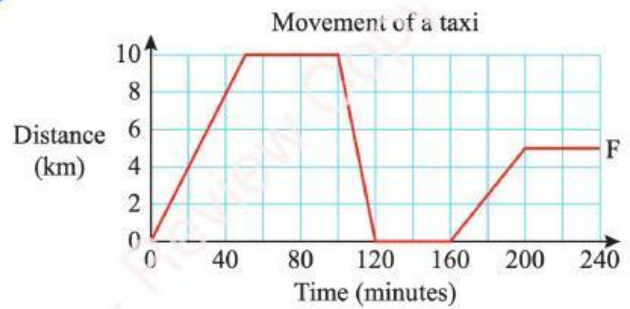
A) -2
B) 3
C) -3
D) 2

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

Find the value of fg(2).
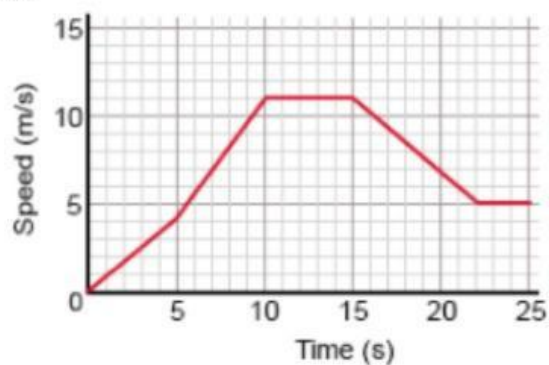
A) -1
B) 2
C) 1
D) 0

31.

Movement of a taxi

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 may marbles does Shane have?**
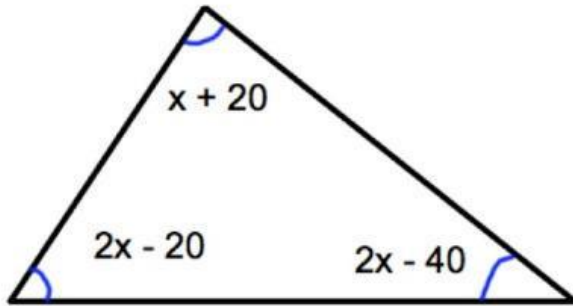
A) 207
B) 350
C) 70
D) 60

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

A) $8.5 \, km$
B) $17 \, km$
C) $1.1 \, km$
D) $21.25 \, km$

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

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

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.