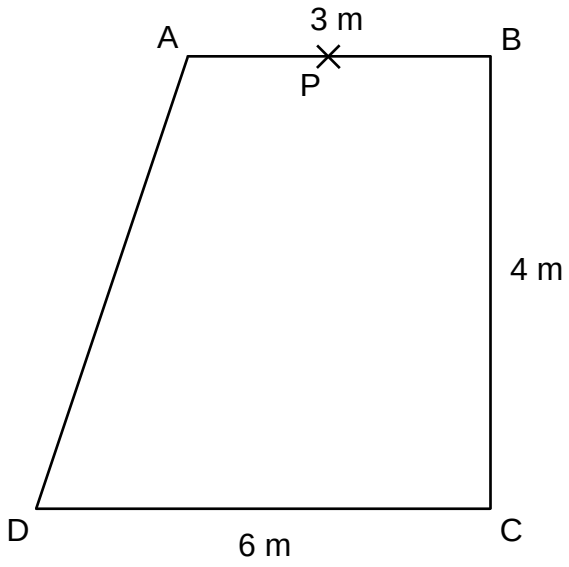
Edexcel Practice GCSE Examination Paper Higher Set 6 Paper 3 Calculator	**Time:** 1 hour 30 minutes	Set 6 of 10
	Standard equipment: pen, pencil, ruler, protractor, compasses, calculator. **You may use a calculator.**	
Instructions to candidates: You must show all of your working. Write all answers in the spaces provided.		

1. Here is a sketch of Callum's living room.



Point P is the mid-point of AB.
Callum places his TV at point P.
For the TV to work Callum needs to connect it to an aerial socket.
The only aerial socket in the room is at point D.

Callum is going to connect the TV to the aerial socket using a cable.
The cable must run along the walls of the room.

Work out the minimum length of cable Callum needs to connect his TV to the aerial socket at point D.
You must show all of your working.

_____ m *(5)*

Total 5 Marks

2. Clara is painting her bedroom.
She mixes purple and white paint in the ratio 3 : 2.

Each 1 litre tin of purple paint costs £4.50.
Each 1 litre tin of white paint costs £3.90.

Clara estimates that she will need 15 litres of paint in total.
Work out the cost of the 15 litres of paint.

£ _____ *(4)*

Total 4 Marks

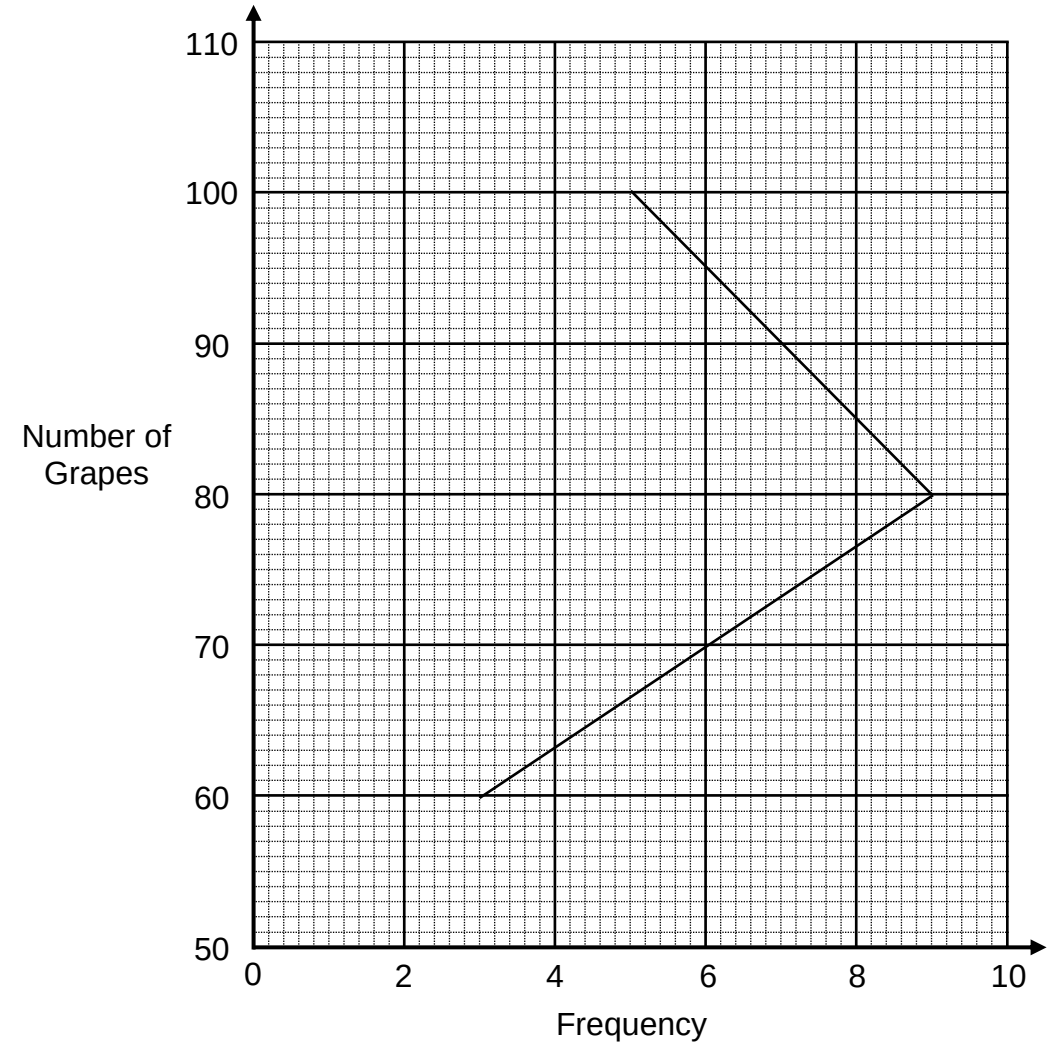
3. 30 boxes of grapes were opened.
The grouped frequency table gives information about the number of grapes in each box.

Number of grapes, n	Frequency
$60 < n \leq 70$	3
$70 < n \leq 80$	6
$80 < n \leq 90$	9
$90 < n \leq 100$	7
$100 < n \leq 110$	5

(a) Write down the modal class interval.

_____ *(1)*

John uses the information in the table to draw a frequency polygon.



(b) Write down **two** mistakes John made when drawing the frequency polygon.

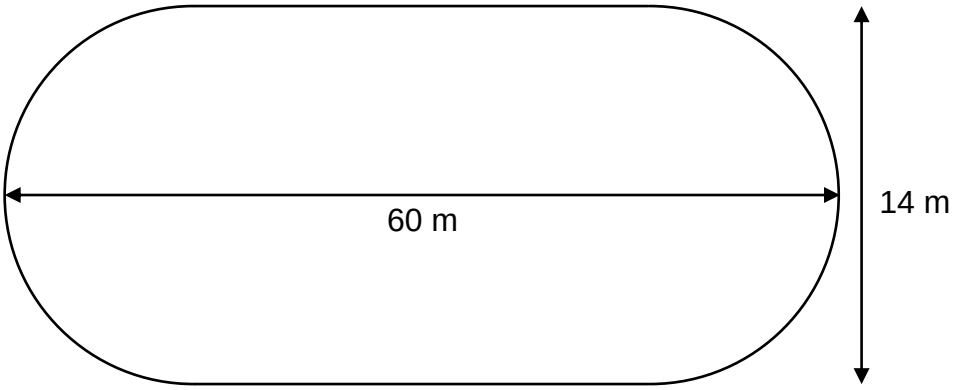
Mistake 1:

Mistake 2:

(2)

Total 3 Marks

4. Here is a sketch of an ice rink.



Amber says that the surface area can be calculated by splitting the shape of the ice rink into a rectangle and two semi-circles.
Using this method, work out the surface area of the ice rink.
Give your answer correct to 1 decimal place.

_____ m^2 *(5)*

Total 5 Marks

5. e is a mathematical constant.
A calculator gives the value of e as 2.7182818.
An approximation for e is $2+\frac{54^2+41^2}{80^2}$.
Show that the value of the approximation is within 0.001% of the calculator value.

Total 4 Marks

6. Simplify fully $\left(4x^4y^5\right)^3$.

_____ *(2)*

Total 2 Marks

7. The first four terms of a sequence are given by: $4,\ 4\sqrt{3},\ 12,\ 12\sqrt{3}$.

(a) Find the 5^{th} term of the sequence.

_____ *(1)*

(b) Find an expression for the n^{th} term of the sequence.

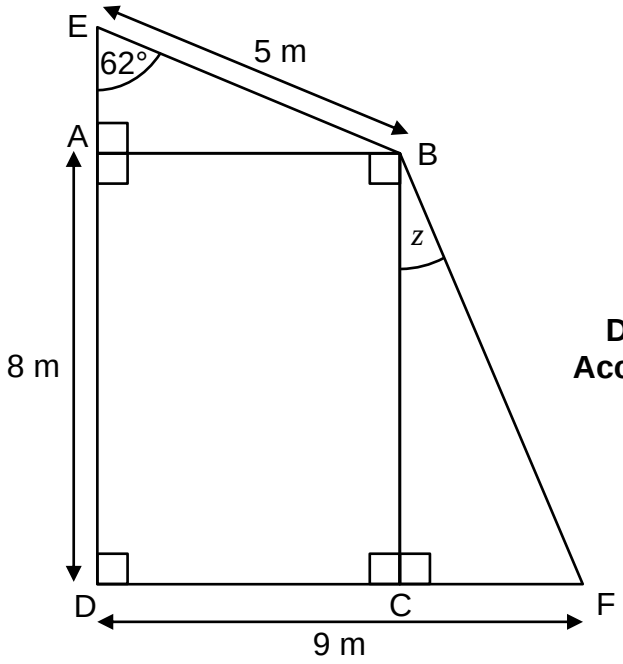
_____ *(2)*

(c) Calculate the value of the 19^{th} term divided by the 13^{th} term.

_____ *(2)*

Total 5 Marks

8.



Not Drawn Accurately

(a) Find the length AB.
Give your answer correct to 3 significant figures.

_____ m *(3)*

(b) Find the angle z.
Give your answer correct to 3 significant figures.

z = _____ ° *(3)*

Total 6 Marks

9. Two functions are defined as:
$f(x) = x^2 - 5$, $g(x) = x + 2$.

(a) Show that $fg(x) = x^2 + 4x - 1$.

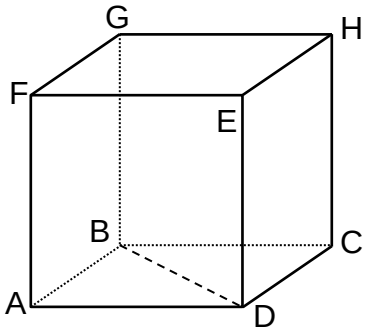
(2)

(b) Solve $fg(x) = gf(x)$.

$x =$ _____ *(4)*

Total 6 Marks

10. The diagram below shows a cube ABCDEFGH.



BD = 15 cm.

Calculate the volume of the cube.
Give your answer correct to 3 significant figures.

_____ cm^3 *(4)*

Total 4 Marks

11. Work out the value of m in the following equation:

$$3^{-4} \times 9^3 = 3^m$$

$m =$ _____ *(3)*

Total 3 Marks

12. On Monday, Tawona, Rory and Emily share a pie in the ratio 4 : 3 : 5.
On Tuesday, they buy a pie of the same size and share it in the ratio 5 : 4 : 6.
Show that Rory gets more pie on Tuesday than he does on Monday.

Total 3 Marks

13. A group of people were asked if they owned a cat or a dog.
All of the people asked owned at least one of the two pets.
76% of the people owned a dog.
52% of the people owned a cat.

(a) Represent this information on a Venn diagram.
Show the percentage in each section of the diagram.

(3)

One person is chosen at random.

(b) (i) Work out the probability that this person owned a cat, given that they owned a dog.

_____ *(2)*

(ii) Work out the probability that this person owned a dog, given that they owned either a cat or a dog but not both.

_____ *(2)*

Total 7 Marks

14. The graph of $y = f(x)$ is transformed to give the graph of $y = -f(x - 7)$.

The point Q on the graph of $y = f(x)$ is mapped to the point R on the graph of $y = -f(x - 7)$.

The co-ordinates of the point Q are (12, –3).
Find the co-ordinates of the point R.

(_____ , _____) *(2)*

Total 2 Marks

15. It is given that $x^2 = 5$.

Choose from the following terms to complete the equations below.

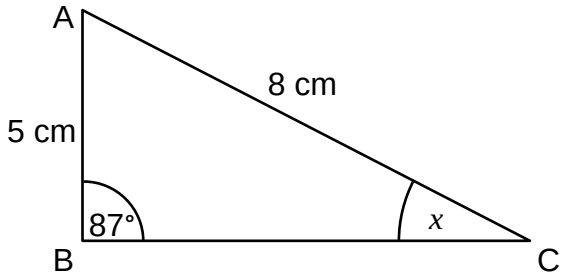
$\sqrt[3]{25}$ 125 $5\sqrt{5}$ $25\sqrt{5}$ $5\sqrt[3]{5}$

(a) $x^3 =$ _____ *(1)*

(b) $x^{\frac{4}{3}} =$ _____ *(1)*

Total 2 Marks

16. Jose is estimating the size of angle x below.



Not Drawn Accurately

Jose approximates angle ABC to be a right angle.
He therefore calculates an estimate for angle x using the rules of right-angled triangles.

How accurate will Jose's estimate be?
You must show all of your working.

Total 3 Marks

17. Show that the equation $4x^2 - x^3 + 5 = 0$ can be written as $x = 4 + \frac{5}{x^2}$ for $x \neq 0$.

Total 2 Marks

18. Solve $3x^2 - 7x - 7 = 0$ using the quadratic formula.
Give your answers correct to 2 decimal places.

$x =$ _____ *(3)*

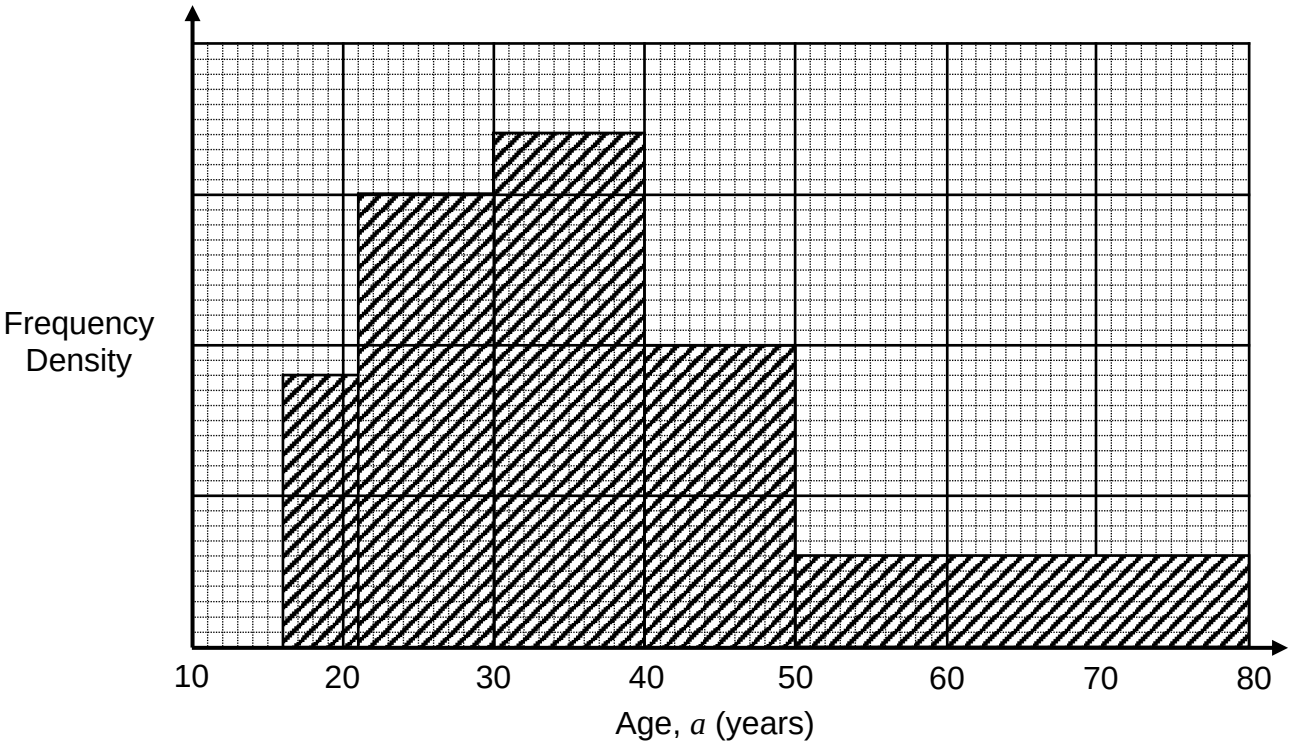
Total 3 Marks

19. Work out $\sqrt{36} \times 2^{-3}$.
Give your answer as a decimal.

_____ *(3)*

Total 3 Marks

20. The histogram shows the ages of people in an office.



9 people in the office are aged between 16 and 21.

(a) Work out an estimate for the number of people in the office who are over 45 years old.

_____ *(3)*

(b) Explain why your answer to part (a) is only an estimate.

(1)

Total 4 Marks

21. An online store is having a sale.
All normal prices are reduced by 15% to give the sale price.
The sale price of a hair dryer is then reduced by 27%.

Charlotte says,

"15 + 27 = 42, so this means the normal price of the hair dryer has been reduced by 42%."

Is Charlotte correct?
You must give a reason for your answer.

_____

Reason:

(2)

Total 2 Marks

22. There are 17 men and 13 women in an office.
One man and one woman are going to be chosen, as a pair, to do a presentation.
Work out the total number of different pairs that could be chosen to do the presentation.
You must show all of your working.

_____ *(2)*

Total 2 Marks

Total For Paper: 80 Marks

