

year 10

End of Year Practice Exam



Mark Scheme and revision:
www.addvancemaths.com/year10

Name:

Teacher:

Score:

/125

%

Instructions

- Use black ink or ball-point pen.
- Answer all the questions.
- Answer questions in the spaces provided.
- You must show all your working out.
- You **may** use a calculator.
- You will need: **ruler, protractor, pencil, compass**

Time: 2 Hours

Information

- The marks for each question are shown in brackets.
- The total marks available for this exam is 125.

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

1. Ahmed gets a salary increase from \$32000 to \$40000. Calculate the percentage increase.

.....% 2

2. In a sale, all prices are reduced by 25%. If a computer normally costs AED 2500, how much does it cost in the sale?

AED..... 2

3. The value of a car depreciates by 15% every year. If its value is \$85000 at the end of 5 years, what was the starting price to 2 d.p?

\$..... 3

4. John bought 10 cans of soda for \$200. He sold 3 of them at a price of \$31, and the rest at a different price. If he made a 20% profit, how much did he sell the other 7 cans for?

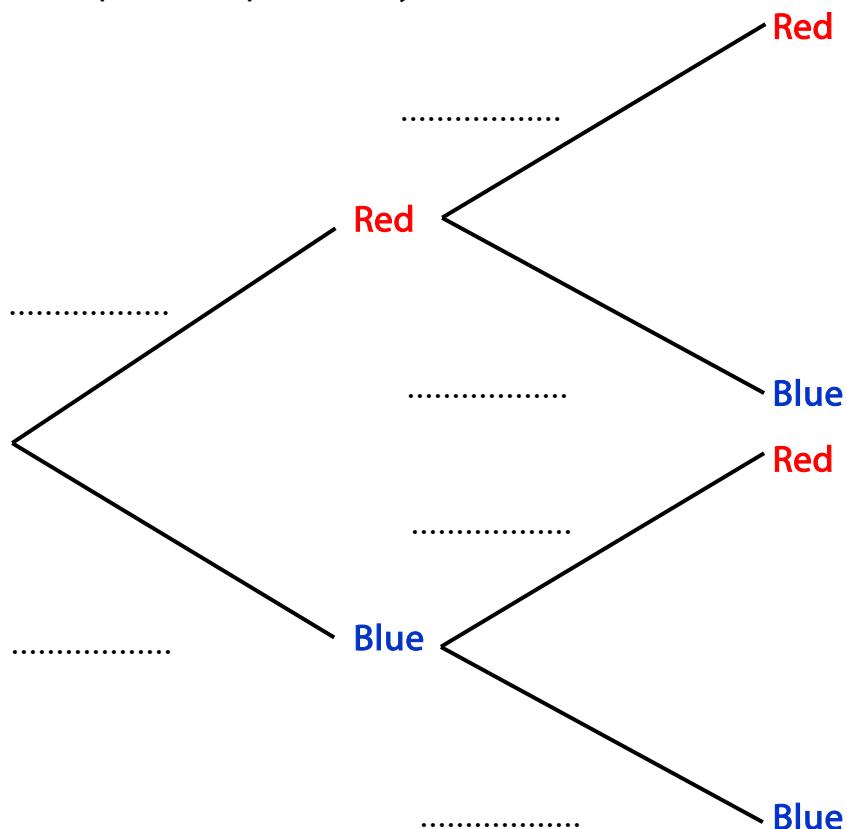
\$..... 4

5. Will invests AED 1000 in a simple interest account which pays 18% per year. David invests AED 1500 in a savings account that returns 10% compound interest per annum. Who earns more in **interest** at the end of 3 years?

..... 3

6. A bag of counters has 5 red counters and 7 blue counters. Mitchell takes one counter and keeps it out of the bag. He then takes a second counter.

(a) Complete the probability tree.



(b) Calculate the probability of getting two red counters.

3

.....

1

(c) Calculate the probability of getting two counters of different colors.

.....

2

7. A , B , and C are points on the circle below. Point O is the centre of the circle. DB is a tangent to the circle. P is the point where BO and AC intersect.

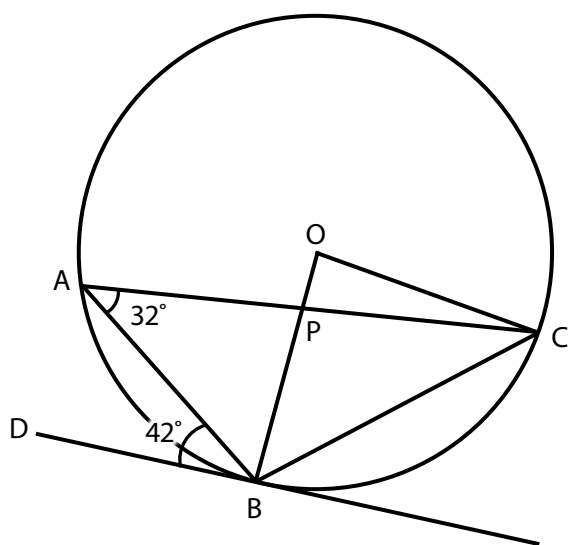


Diagram **NOT**
drawn accurately.

- (a) Calculate the angle BOC . Give a reason for your answer.

.....
.....

.....° 2

- (b) Calculate the angle BPC . Show all stages of your working clearly.

.....° 3

8. A , B , and C are points on the circle below. BC is the diameter.
 Angle ABC is 35° .
 AC is 8cm
 Calculate the area of the shaded region to 2 d.p.

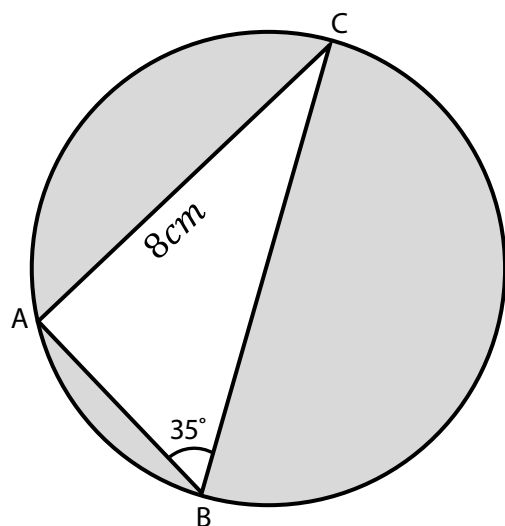
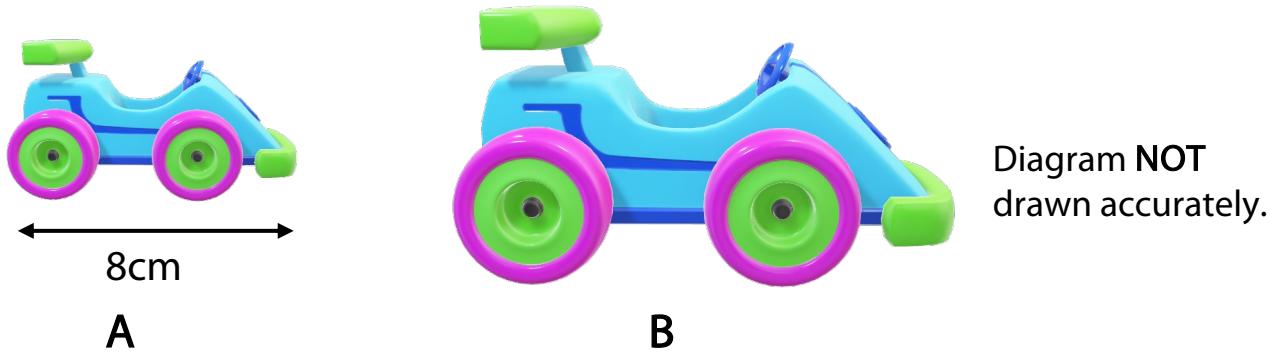


Diagram NOT
drawn accurately.

..... cm^2 6

9. The diagram below shows toy car A and toy car B which are mathematically similar.

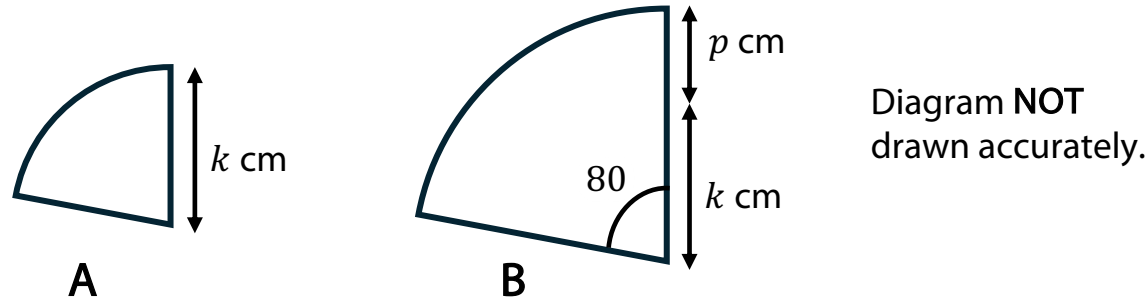


(a) Complete the table based on the provided values.

	Scale Factor	Car A	Car B
Length	1.5	8cm	
Surface area		235cm ²	
Volume			2700cm ³

4

- (b) The two sectors below are similar. The scale factor for the area is $\frac{16}{9}$. The area of sector A is 18π . Calculate the value of p .



10. The shape below is created by joining a cylinder and a cone. The surface area of the shape is 280π . Find k in terms of h .

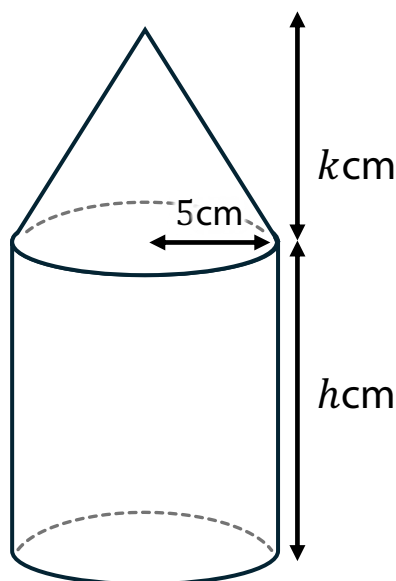


Diagram **NOT**
drawn accurately.

Curved surface of a cone:

$$\pi r \sqrt{h^2 + r^2}$$

Surface area of a cylinder:

$$2\pi r(r + h)$$

$$k = \dots\dots\dots 6$$

11. (a) Expand and simplify the following brackets.

(i) $(x + 3)(x - 5)$

.....

(ii) $(2x^2 + 6)(4 - 3x)$

.....

(iii) $(3x + 5)(9 - 2x^2)(x - 4)$

..... 6

(b) Factorise the following expressions.

(i) $4x^2 - 81$

.....

(ii) $x^2 + 2x - 8$

.....

(iii) $6x^2 + 7x + 2$

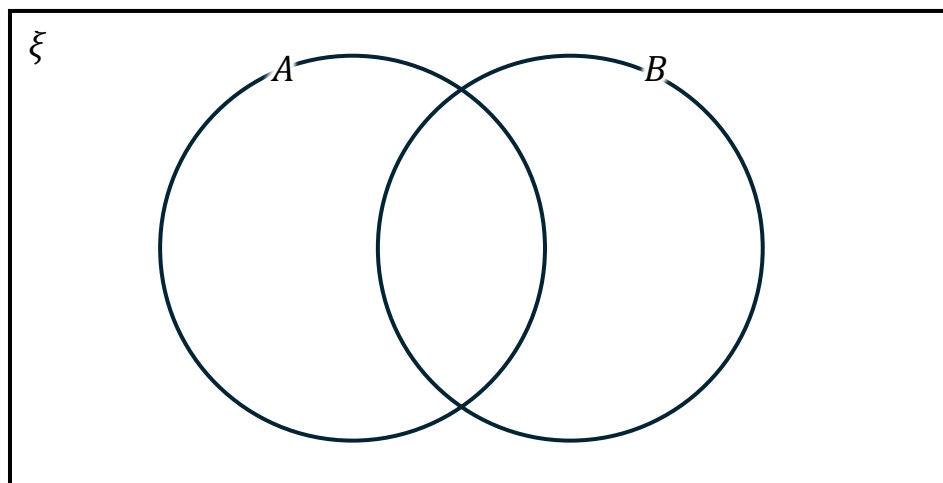
..... 6

12. $\xi = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14\}$

A = Multiples of 2

B = Multiples of 3

(a) Complete the Venn diagram.



(b) List the elements of:

(i) $A \cap B$

.....

(ii) $A' \cap B$

.....

(iii) $(A \cup B)'$

..... 3

(c) Find:

(i) $n(A \cup B)$

..... 2

(ii) $P(A' \cup B)$

..... 3

13. (a) Solve the following simultaneous equations algebraically.

$$x + 3y = 5$$

$$4x + 2y = 3$$

$$x = \dots\dots\dots$$

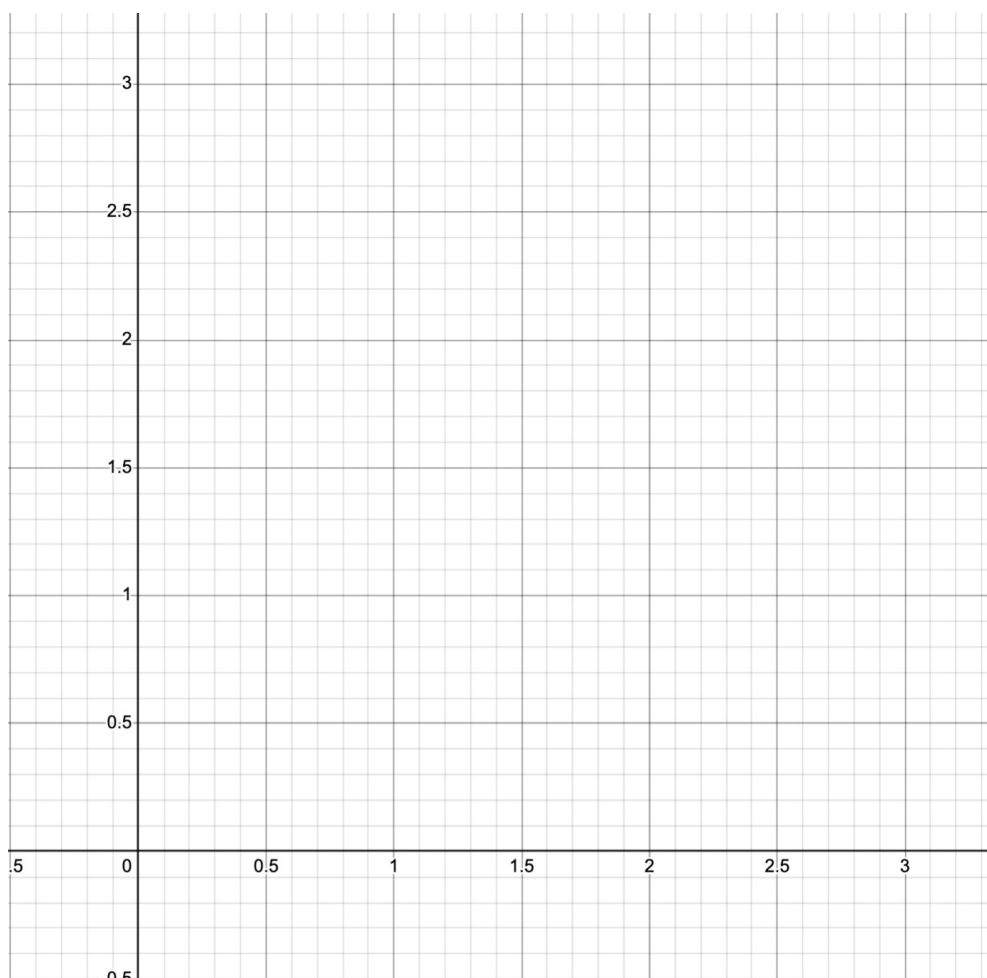
$$y = \dots\dots\dots$$

3

(b) Estimate the solution to the following simultaneous equations using the graph.

$$x + 2y = 6$$

$$2x - y = 3$$



$$x = \dots\dots\dots$$

$$y = \dots\dots\dots$$

3

14. Simplify fully, showing clear algebraic working.

(a) $\frac{2x^2 - 18}{2x^2 + 10x + 12}$.

..... 3

(b) Express as a single fraction in its simplest form.

$$\frac{1}{3-x} + \frac{2}{x+2}$$

..... 3

15. Use algebra to show that the recurring decimal $0.\dot{3}\dot{6} = \frac{4}{11}$.

..... 3

16. The table below shows information about the scores of 80 students in an exam.
Work out an estimate for the mean score to 1 d.p.

Score (s)	Frequency
$0 < s \leq 25$	15
$25 < s \leq 50$	43
$50 < s \leq 75$	12
$75 < s \leq 100$	10

..... 4

17. Below is a table that shows the population of 4 cities in standard form.

City	Population
Tokyo	3.7×10^7
New York	8.5×10^6
Paris	2.2×10^6
Delhi	3.2×10^7

(a) Calculate the difference between the populations of Tokyo and New York.

..... 3

(b) The population of Delhi is k times the population of Paris. Calculate k to 1 d.p.

$k =$ 1

(c) Calculate the sum of the populations of all the cities.

..... 3

18. R is inversely proportional to the square root of y .
 $R = 5$ when $y = 4$.

(a) Find a formula for y in terms of R .

(b) Calculate the value of y when $R = 2.5$

$$y = \dots\dots\dots 2$$

19. Solve the inequality: $\frac{5x + 1}{2} \leq -4$

$$y = \dots\dots\dots 2$$

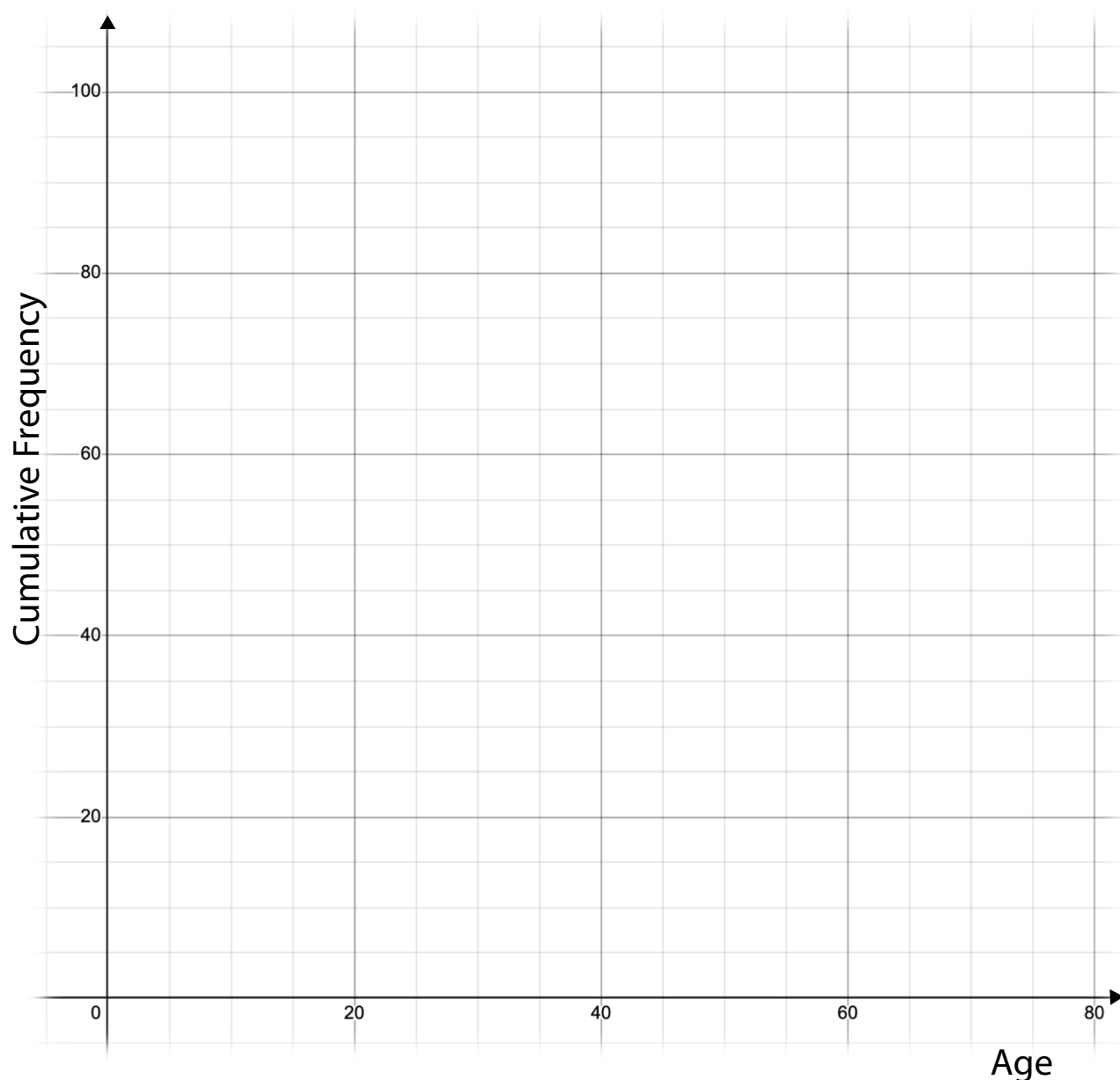
20. The table below shows the ages of 100 doctors in a hospital.

Age (a)	Frequency	Cumulative Frequency
$25 < a \leq 35$	18	
$35 < a \leq 45$	23	
$45 < a \leq 55$	35	
$55 < a \leq 65$	14	
$65 < a \leq 75$	10	

(a) Fill in the cumulative frequency column on the table.

2

(b) Draw a cumulative frequency graph for this information.



4

(c) Find an estimate, based on the graph, for the interquartile range.

..... years ²

(d) Find an estimate for the number of doctors older than 70 years.

..... 2

21. Tom drives 50km in one hour, then takes a break for 30 minutes. After that, he drives at a speed of 80km/h for 2 hours. He then takes another break for an hour and finally drives 40km in 30 minutes. Calculate the total average speed including the rests.

..... km/h ⁴

22. Rewrite the following surd as a simplified fraction in the form $\frac{a+b\sqrt{3}}{c}$.

$$\frac{4 - \sqrt{3}}{8 - 4\sqrt{3}}$$

..... 4

23. Re-arrange the formula to make r the subject.

$$p = \frac{5s + 3r}{4}$$

$r =$ 2

24. Convert 45km/h to m/s.

.....m/s 2

25. The following four lines are constructed on a graph, creating a total of 4 intersection points. These points, when connected, form a parallelogram. Calculate the size of the each of the larger interior angles to 3 significant figures.

$$\begin{array}{l|l} 2x - y = -3 & y = 3 \\ 2x - y = -10 & y = 6 \end{array}$$

Self-reflection

How did you revise for the exam? (tick all that you did)

Reading class notes ☐

Online practice ☐

Doing practice questions ☐

☐ Getting help from your teacher

☐ Recapping the previous exam

Study group (with friends) ☐

Reading textbooks ☐

Watching videos ☐

Were these revision techniques useful? (circle your answer)



Yes



A bit



No

How could you revise more effectively next time?

List three topics from this test that you are good at, and three that need more work.

1.

2.

3.

4.

5.

6.

"Failure is the stepping stone to success"

Revision Guidance &
Resources

advancemaths.com/revision



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