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Education Bureau

Territory-wide System Assessment 2026

Secondary 3 Mathematics

QUESTION BOOKLET

INSTRUCTIONS

1. There are 47 questions in this paper.
2. Time allowed is 65 minutes.
3. Answer ALL questions in the separate ANSWER BOOKLET.
4. The use of HKEAA approved calculators is permitted.
5. Unless otherwise specified, numerical answers should be either exact or correct to 3 significant figures.
6. Rough work should be done on the rough work sheet provided.
7. The diagrams in this paper are not necessarily drawn to scale.

SECTION A: Choose the best answer for each question.
You should mark all your answers in the ANSWER BOOKLET.

1. $6^3 =$

A. $3 \times 3 \times 3 \times 3 \times 3 \times 3$.

B. $6 \times 6 \times 6$.

C. 6×3 .

D. 63 .

2. Round off $103.934\ 7$ to 3 decimal places.

A. 103

B. 104

C. 103.934

D. 103.935

3. $\sqrt[3]{64} =$

A. 8 .

B. 4 .

C. $\frac{1}{4}$.

D. $\frac{1}{8}$.

4. Ivy and 6 friends had a meal together. The total expense was $\$x$. After using a \$100 cash coupon, they shared the remaining amount equally. How much did each person have to pay?

A. $\$\left(\frac{x}{7}-100\right)$

B. $\$\left(\frac{x}{7}+100\right)$

C. $\$\left(\frac{x-100}{7}\right)$

D. $\$\left(\frac{x+100}{7}\right)$

5. Which of the following is an equation with the solution $x=-\frac{1}{4}$?

A. $x+4=0$

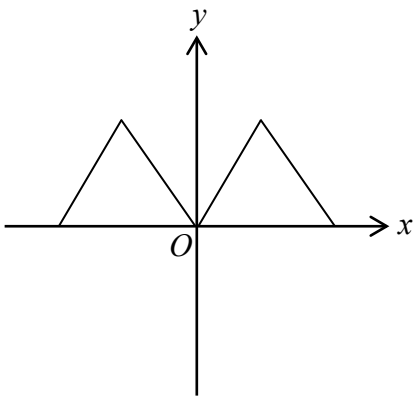
B. $x-4=0$

C. $4x+1=0$

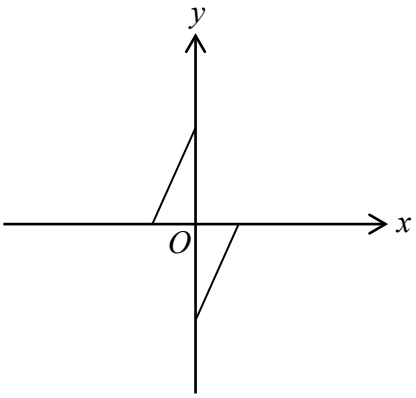
D. $4x-1=0$

6. Which of the following may represent the graph of the equation $3x + y - 4 = 0$?

A.



B.



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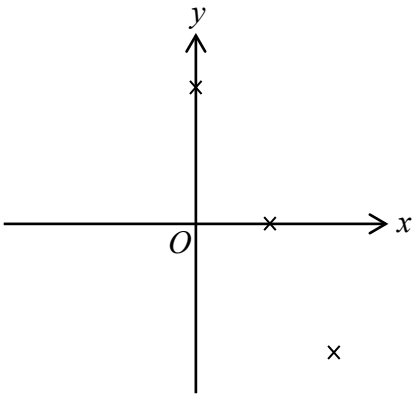
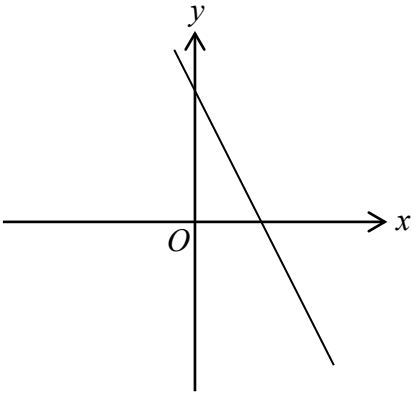


D.



7. $6.83 \times 10^{-5} =$

A. 0.000 006 83 .

B. 0.000 068 3 .

C. 683 000 .

D. 68 300 000 .

8. Which of the following is a polynomial ?

A. $3a^2+5a$

B. $\frac{3}{a^2}+5a$

C. $3\sqrt{a}+5a$

D. $\frac{3}{\sqrt{a}}+5a$

9. The maximum load capacity of an elevator is $1\,000$ kg . There is already a worker weighing 80 kg inside the elevator and then N boxes of goods weighing 70 kg each are placed in the elevator. It is given that the elevator is not overloaded, which of the following inequalities can be used to find the range of values of N ?

A. $80+70N \le 1000$

B. $80+70N < 1000$

C. $80+70N \ge 1000$

D. $80+70N > 1000$

10. The length of an object is measured as 4.0 cm (correct to 2 significant figures). Find the relative error of the measured value.

A. $\frac{1}{4}$

B. $\frac{1}{20}$

C. $\frac{1}{40}$

D. $\frac{1}{80}$

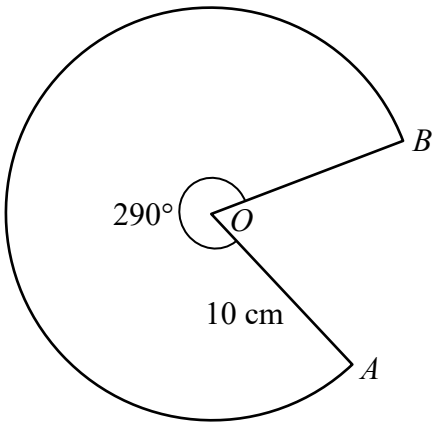
11. In the figure, the radius of sector OAB is 10 cm . If reflex $\angle AOB = 290°$, then the arc length of the sector =

A. $\pi(10)^2 \times \frac{290°}{360°}$ cm .

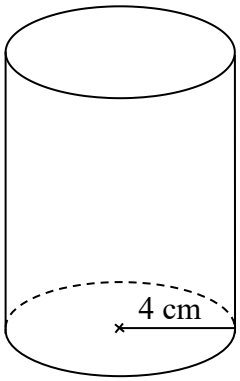
B. $\pi(20)^2 \times \frac{290°}{360°}$ cm .

C. $2\pi(10) \times \frac{290°}{360°}$ cm .

D. $2\pi(20) \times \frac{290°}{360°}$ cm .



12.



The figure shows a solid right circular cylinder. Its base radius is 4 cm and its total surface area is 112π cm^2. Find the height of the circular cylinder.

A. 7 cm

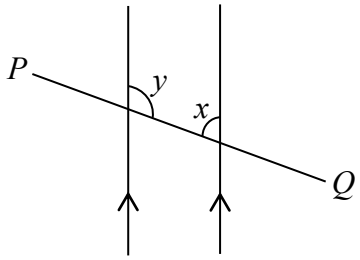
B. 10 cm

C. 12 cm

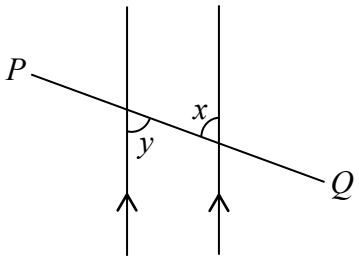
D. 14 cm

13. In each of the following figures, PQ is a straight line. Which figure shows that x and y are a pair of interior angles on the same side?

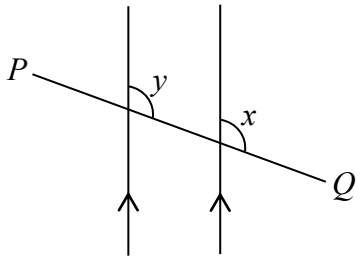
A.



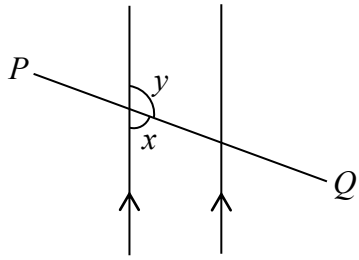
B.



C.

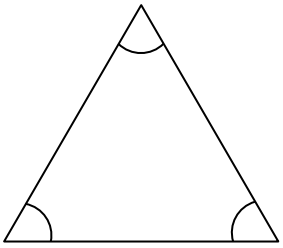


D.

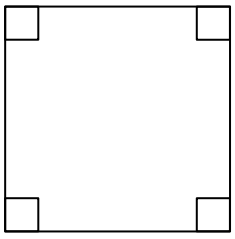


14. Which of the following figures **MUST** be a regular polygon?

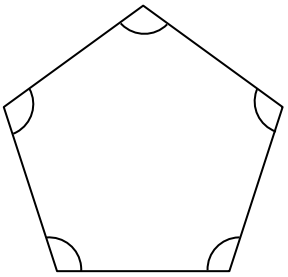
A.



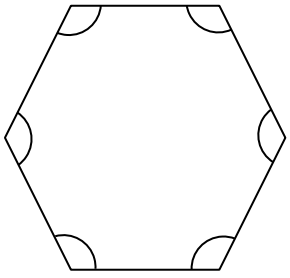
B.



C.



D.



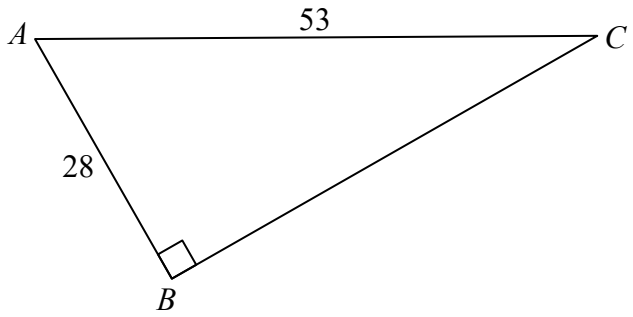
15. In the figure, $\triangle ABC$ is a right-angled triangle. If $AB = 28$ and $AC = 53$, then $BC =$

A. $53^2 - 28^2$.

B. $53^2 + 28^2$.

C. $\sqrt{53^2 - 28^2}$.

D. $\sqrt{53^2 + 28^2}$.



16. $A\ (-2, 3)$ and $B\ (4, 7)$ are two points in a rectangular coordinate plane. $M\ (x, y)$ is the mid-point of AB. Find x and y.

A. $x = -6\ ,\ y = -4$

B. $x = -3\ ,\ y = -2$

C. $x = 1\ ,\ y = 5$

D. $x = 2\ ,\ y = 10$

17. The slopes of four straight lines L_1, L_2, L_3 and L_4 are listed in the table below.

Straight line	L_1	L_2	L_3	L_4
Slope	$\frac{5}{7}$	$\frac{7}{5}$	$\frac{5}{7}$	$-\frac{7}{5}$

Which of the following is/are true?

I. $L_1 \perp L_2$

II. $L_1 // L_3$

III. $L_3 \perp L_4$

A. I only

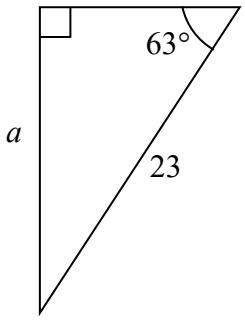
B. II only

C. I and III only

D. II and III only

18. Referring to the figure, find a correct to 3 significant figures.

A. 10.4
B. 20.5
C. 25.8
D. 45.1



19. The table below shows the numbers of participants from S1 to S6 in a joint school music competition.

Class level	S1	S2	S3	S4	S5	S6
Number of participants	19	25	27	23	22	4

Miss Wong analyses the proportion of participants at each level relative to the total number of participants. Which of the following is the most suitable statistical chart for presenting the data above?

A. Pie chart
B. Histogram
C. Broken line graph
D. Cumulative frequency curve

20. The following table shows the distribution of the numbers of siblings for 200 students.

Number of siblings	0	1	2	3	4 or more
Frequency	79	67	28	19	7

According to the table above, find the relative frequency of students who have at least 1 sibling.

A. $\frac{27}{100}$

B. $\frac{67}{200}$

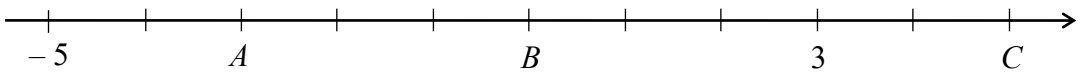
C. $\frac{79}{200}$

D. $\frac{121}{200}$

SECTION B: Write ALL the answers in the ANSWER BOOKLET.
Working need not be shown.

21. Calculate $\left[(2+8\times3)-(18-3\div3)\right]\times4$.

22. Write down the numbers represented by A , B and C shown on the number line below.



23. The number of students in a school increased from 800 last school year to 840 this school year. Find the percentage change in the number of students in the school.

24. In each of the following situations, determine whether the relationship between x and y is direct proportion or inverse proportion.

(i) Patrick works at a fast-food restaurant. His wage is $\$60$ per hour. After working for x hours, the total wage is $\$\,y$.

(ii) The area of a rectangle is $60\,\text{cm}^2$. Its length is x cm and its width is y cm .

25. In a football match between Team A and Team B, there are $32\,000$ fans and $18\,000$ fans of Team A and Team B respectively. Find the ratio of the number of fans of Team A to the total number of fans of both teams.

26. It is given that there are about $31\,600\,000$ seconds in one year, use scientific notation to represent this number.

27. Expand $(x-y)(3x+y)$.

28. Factorise $2x^2+9x-18$.

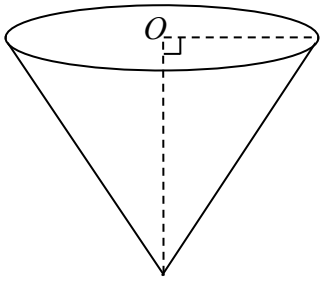
29. Factorise $16m^2-9$.

30. Consider the formula $W=\dfrac{2xy}{x-y}$. If $x=3$ and $y=-5$, find the value of W .

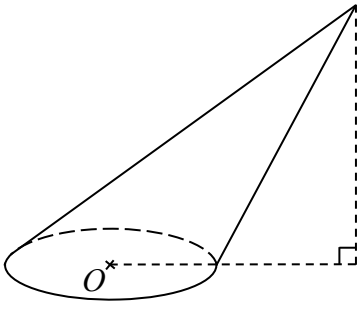
31. Solve the inequality $2y>3y-30$.

32. The figure shows circular cones A , B and C . The centres of their bases are all labelled as O . Which of the following is **NOT** a right circular cone?

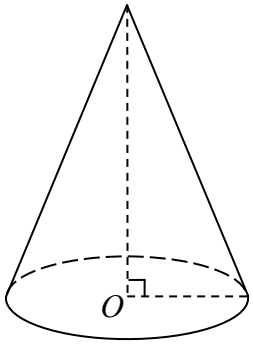
Cone A



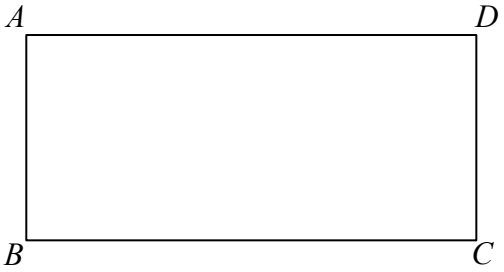
Cone B



Cone C



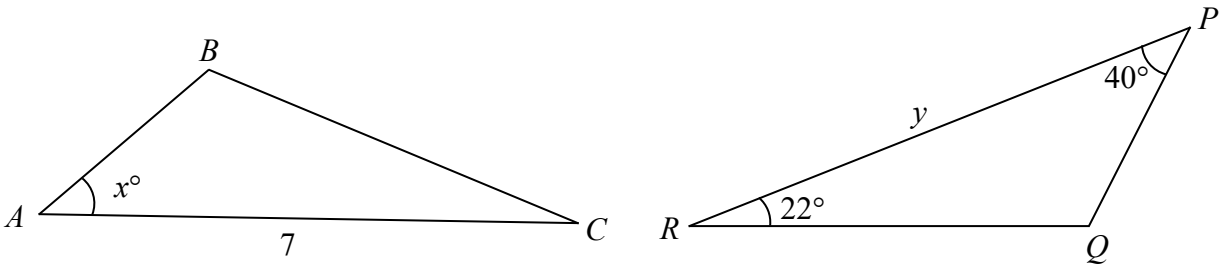
33.



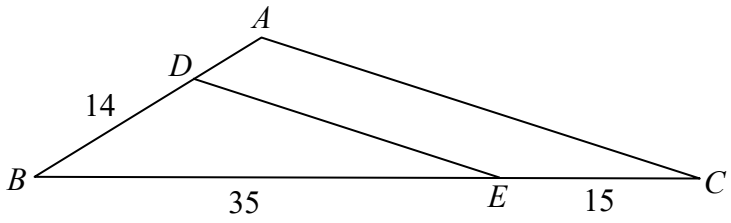
From the options below, circle the correct notation(s) that can represent the above rectangle. (May be more than one answer)

ADBC *BCDA* *CBAD*

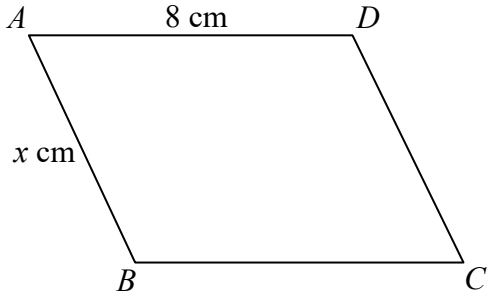
34. In the figure, $\triangle ABC \cong \triangle PQR$. Find the values of x and y.



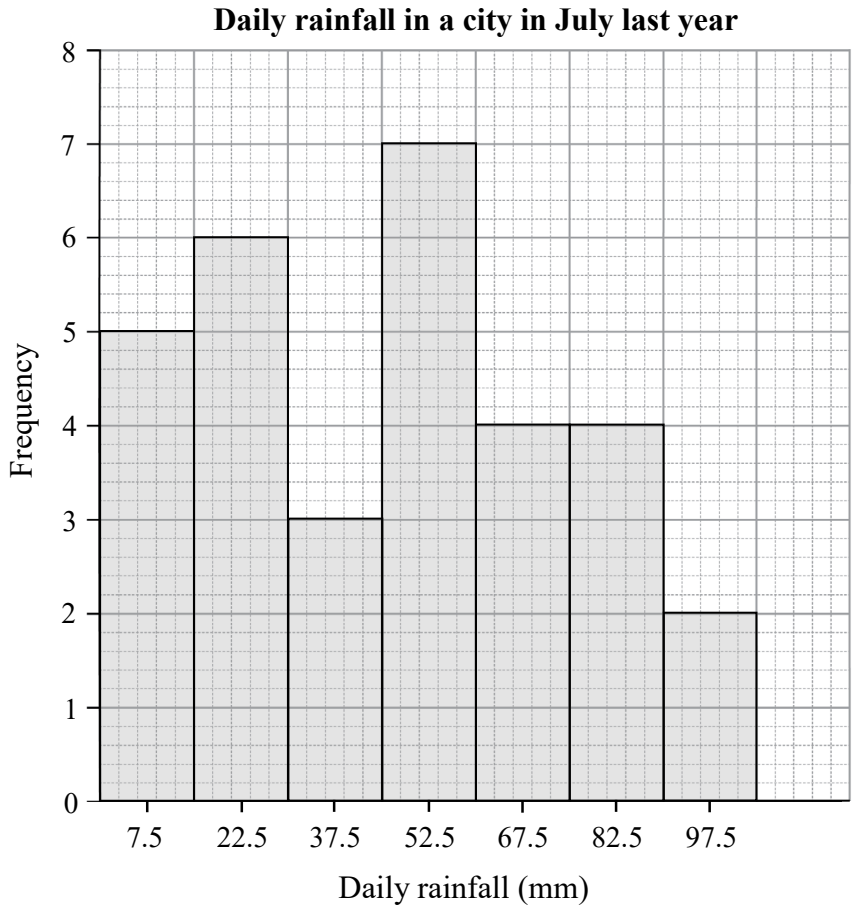
35. In the figure, ADB and BEC are straight lines. $\triangle ABC \sim \triangle DBE$. It is given that $BD = 14$, $BE = 35$ and $CE = 15$. Find AB.



36. In the figure, $ABCD$ is a parallelogram and its perimeter is 28 cm . $AD = 8$ cm and $AB = x$ cm . Find the value of x .



37. The histogram below shows the distribution of daily rainfall in a city in July last year.



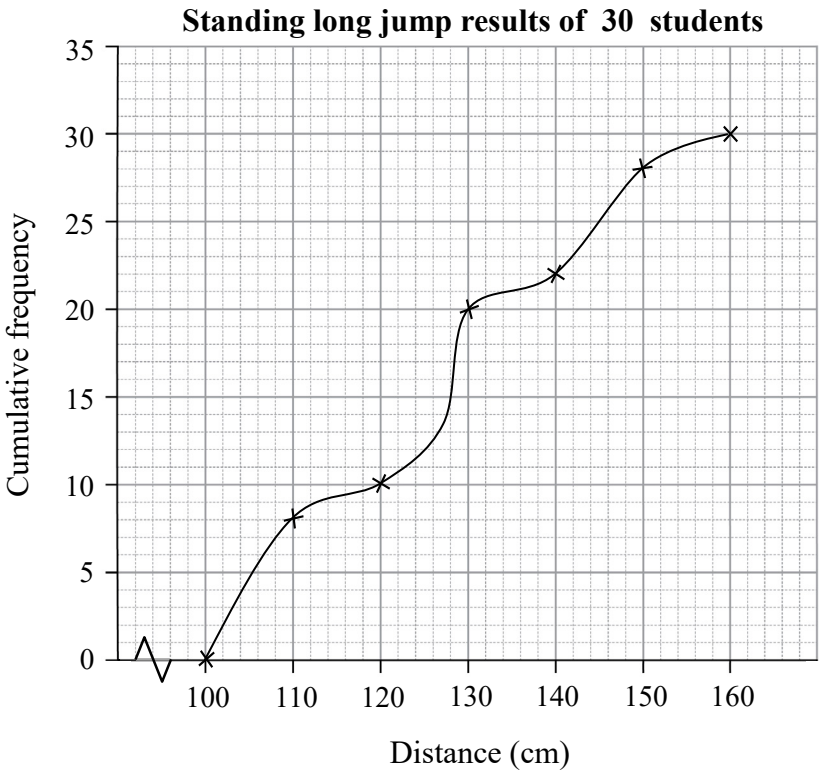
According to the above histogram, answer the following questions.

(a) Complete the frequency distribution table in the **ANSWER BOOKLET**.

(b) How many days in July had rainfall of not less than 75 mm ?

(c) Find the modal class of the daily rainfall for July.

38. The cumulative frequency curve below shows the distribution of the standing long jump results of 30 students.



According to the above diagram, answer the following questions.

(a) Find the median of the standing long jump results of 30 students.

(b) A student with a result of less than 120 cm needs to attend the Fitness Enhancement Class. How many students in that group needed to attend the Fitness Enhancement Class?

39. The table shows the weight of each judging criterion for selecting a lunch supplier at a school and the score of Supplier *A*.

Criterion	Taste	Variety	Price	Hygiene
Score	27	35	30	23
Weight	4	5	2	7

Find the weighted mean score of Supplier *A*.

SECTION C: All working must be clearly shown.
Write the mathematical expressions, answers and statements/conclusions in the spaces provided in the ANSWER BOOKLET.

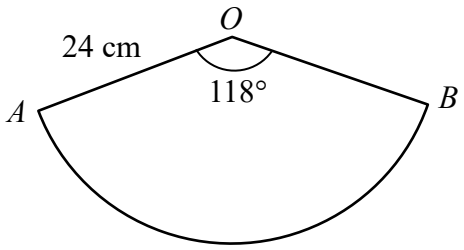
40. Anna deposits \$3 400 in a bank at a **simple interest rate** of 3% p.a. How many years will it take her to receive interest of \$612 ?

41. Complete the table for the equation $2x-3y-6=0$ in the **ANSWER BOOKLET**.

x	-3	0	3
y		-2	

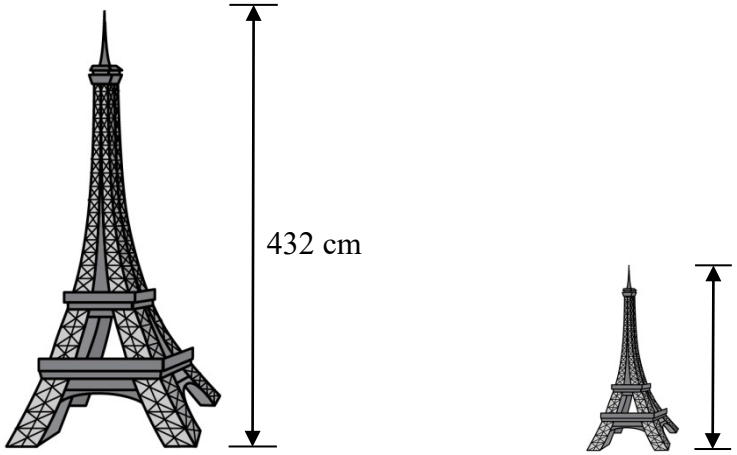
According to the table, plot the graph of this equation on the rectangular coordinate plane given in the **ANSWER BOOKLET**.

42. In the figure, the radius of sector OAB is 24 cm and $\angle AOB = 118°$. Find the area of the sector correct to 3 significant figures.



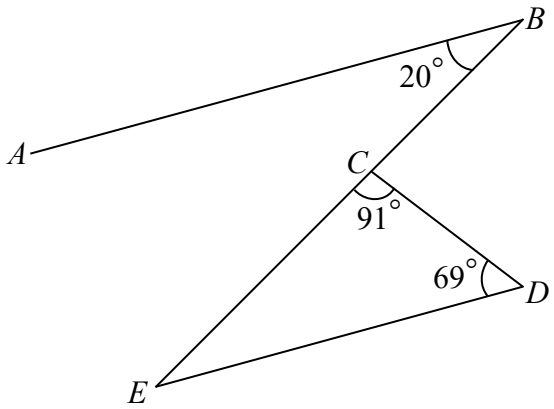
43. Solve the simultaneous equations $\begin{cases} 4x+y=13 \\ 2x+y=9 \end{cases}$.

44. In the figure, A and B are similar 3-D models. The volume of A is 27 times that of B. If the height of A is 432 cm, find the height of B.



A B

45. In the figure, BCE is a straight line. $\angle ABE = 20°$, $\angle DCE = 91°$ and $\angle CDE = 69°$. Prove that $AB \parallel ED$.



46. The following frequency distribution table shows the distribution of advertising income for 40 online channels last month.

Advertising income (thousand dollars)	1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70
Frequency	2	8	3	2	11	3	11

(a) According to the above table, complete the cumulative frequency distribution table in the **ANSWER BOOKLET**.

(b) Construct a cumulative frequency polygon in the **ANSWER BOOKLET** to represent the above data.

47. Due to adverse weather conditions, an airline had a total of 10 departing flights delayed yesterday. The following are the departure delay times (minutes) for the flights.

10 20 35 70 99 115 123 126 135 167

It is given that the mean of the departure delay times for the flights is 90 minutes. Hence, the spokesperson for the airline claimed, " Over half of the flights had departure delay times of less than 90 minutes. "

Do you agree with the spokesperson's claim? Explain your answer.

END OF PAPER

Do not write on this page.

Answers written on this page will not be marked.