

Name: _____

Date: _____

Marks: ____/32

Creative Secondary School

F3 MATHEMATICS

Entrance Test 24-25

Question-Answer Book

Time allowed: 35 minutes

INSTRUCTIONS

1. There are 24 questions in this paper. Attempt ALL questions in this paper. Write your answers in the spaces provided in this Question-Answer Book.
2. The use of HKEAA approved calculators is permitted.
3. Unless otherwise specified, numerical answers should be either exact or correct to **3 significant figures**.
4. State the unit in your answers.
5. The diagrams in this paper are not necessarily drawn to scale.

SECTION A: Circle the best answer for each question. [10 marks]

1. Which of the following is an identity?

- A. $6x + 2x = 12x$
- B. $6x - 2x = 3x$
- C. $6x + 2 = 2(3x + 1)$
- D. $6x - 2 = 2 - 6x$

2. Determine whether each of the following is factorization or expansion.

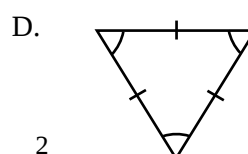
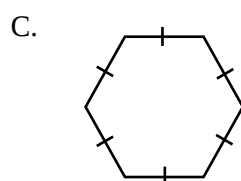
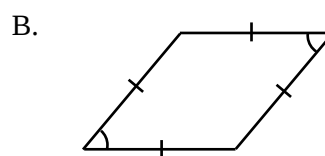
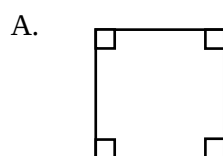
(i)	$x^2 + 8x - 20$ $= (x + 10)(x - 2)$
(ii)	$(x + 10)(x - 2)$ $= x^2 + 8x - 20$

- A. (i) Factorization (ii) Factorization
- B. (i) Factorization (ii) Expansion
- C. (i) Expansion (ii) Factorization
- D. (i) Expansion (ii) Expansion

3. There are 920 staff members in a company. The number of male staff members is more than that of female staff members by 36. If there are x male staff members and y female staff members in the company, which of the following pairs of simultaneous equations shows the relation between x and y ?

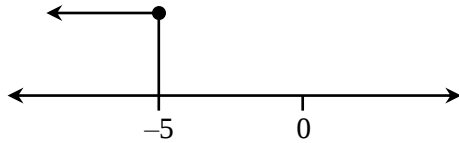
- A. $\begin{cases} x + y = 920 \\ x - y = 36 \end{cases}$
- B. $\begin{cases} x + y = 920 \\ y - x = 36 \end{cases}$
- C. $\begin{cases} x = 920 + y \\ x - y = 36 \end{cases}$
- D. $\begin{cases} x = 920 + y \\ y - x = 36 \end{cases}$

4. Which of the following figures must be a regular polygon?

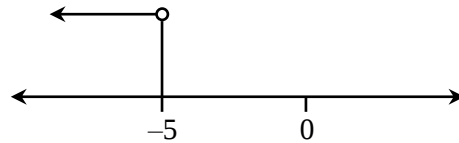


5. Which of the following diagrams represents $x \leq -5$?

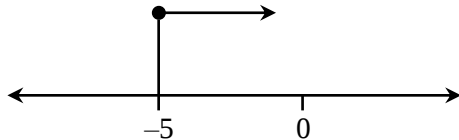
A.



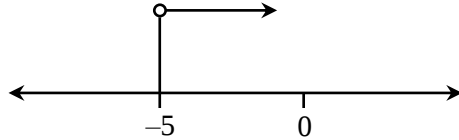
B.



C.



D.



6. The height of a mountain is 275 m (correct to the nearest m). Which of the following could be its actual height?

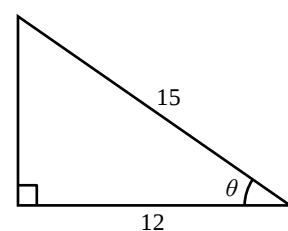
- A. 274.0 m
- B. 274.4 m
- C. 275.4 m
- D. 275.6 m

7. Fiona spent x hours on reading yesterday. The time spent on reading today was twice the time spent yesterday. If the total time she spent on reading in these two days was **not less than** 4 hours, which of the following inequalities can be used to find the range of values of x ?

- A. $x + 2x > 4$
- B. $x + 2x \geq 4$
- C. $x + \frac{x}{2} > 4$
- D. $x + \frac{x}{2} \geq 4$

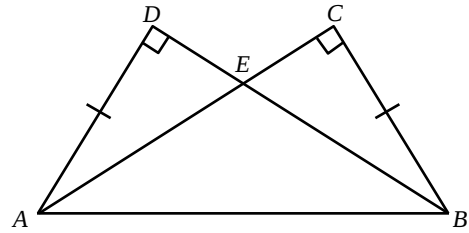
8. Referring to the figure, find θ . (Correct to 3 significant figures)

- A. 36.9°
- B. 38.7°
- C. 51.3°
- D. 53.1°



9. In the figure, AEC and BED are straight lines,
 $AD = BC$ and $\angle ADB = \angle BCA = 90^\circ$.

Prove that $\triangle ABD \cong \triangle BAC$.

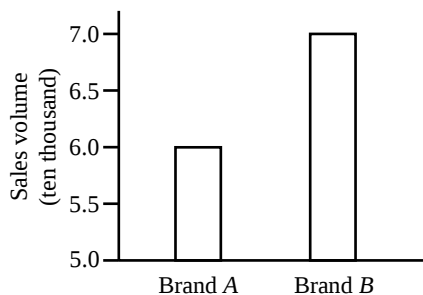


Which of the following proofs is correct?

- | | |
|---|--|
| <p>A. $AD = BC$ (given)</p> <p>$\angle ADB = \angle BCA$ (given)</p> <p>$BD = AC$ (given)</p> <p>$\therefore \triangle ABD \cong \triangle BAC$ (SAS)</p> | <p>B. $AD = BC$ (given)</p> <p>$AB = BA$ (common side)</p> <p>$\angle ADB = \angle BCA = 90^\circ$ (given)</p> <p>$\therefore \triangle ABD \cong \triangle BAC$ (RHS)</p> |
| <p>C. $AD = BC$ (given)</p> <p>$\angle ADB = \angle BCA$ (given)</p> <p>$AB = BA$ (common side)</p> <p>$\therefore \triangle ABD \cong \triangle BAC$ (SAS)</p> | <p>D. $AD = BC$ (given)</p> <p>$\angle ADB = \angle BCA$ (given)</p> <p>$\angle ABD = \angle BAC$ (corr. $\angle s, \cong s$)</p> <p>$\therefore \triangle ABD \cong \triangle BAC$ (AAS)</p> |

10. The diagram below shows the sales volumes of two brands of washing machines in 2021.

Sales volumes of brand A and brand B washing machines in 2021



Based on the diagram above, Peony concludes that the sales volume of brand B washing machine are twice the sales volume of brand A washing machine in 2021.

Which of the following statements is the **best** reason that Peony is misled by the above diagram?

- The prices of the two brands of washing machines are not shown.
- There is no comparison of the sales volumes of other brands of washing machines.
- The scale of the horizontal axis in the diagram does not show in values.
- The scale of vertical axis in the diagram does not start from 0.

SECTION B: Working need not be shown. [11 marks]

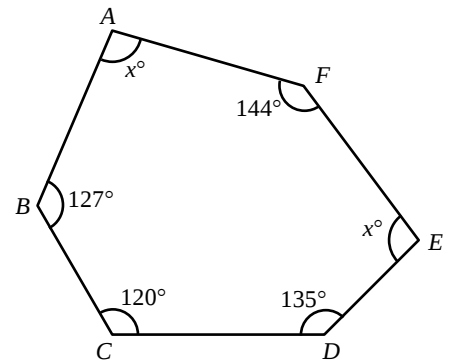
11. Expand $(4x - 1)^2$.

12. Factorize $ax - ay - 6x + 6y$.

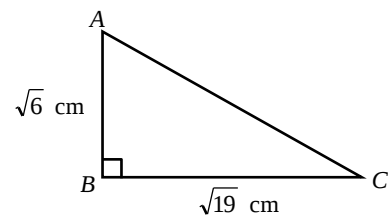
13. Simplify $\frac{2b^2}{3a} \times \frac{9a^2}{b^4}$.

14. Consider the formula $\frac{p}{2} + \frac{5}{q} = \frac{r}{3}$. If $q = -5$ and $r = 6$, find the value of p .

15. The figure shows a hexagon $ABCDEF$. Find the value of x .



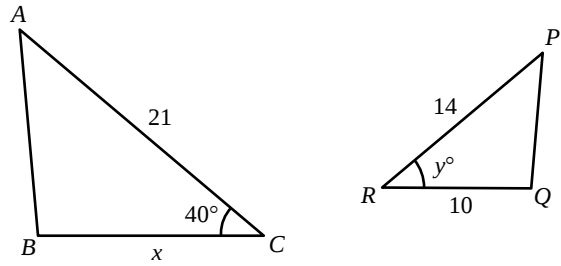
16. In the figure, $\angle ABC = 90^\circ$, $AB = \sqrt{6}$ cm and $BC = \sqrt{19}$ cm. Find the length of AC .



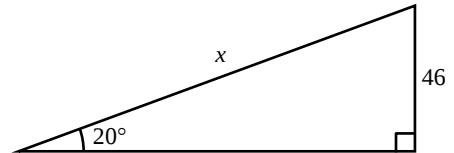
17. In the figure, $\triangle ABC \sim \triangle PQR$. Find

(a) the value of x ,

(b) the value of y .

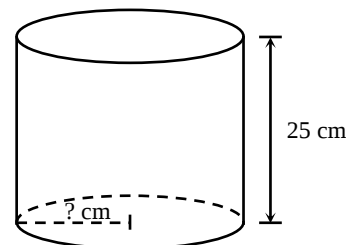


18. Find the value of x in the figure.



19. Solve the inequality $8 - 3x < 14$.

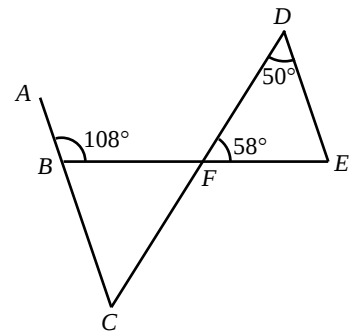
20. The figure shows a right cylinder. Its height is 25 cm and its curved surface area is $800\pi \text{ cm}^2$. Find the base radius of the cylinder.



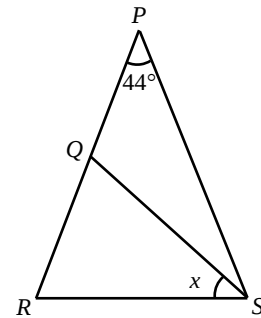
SECTION C: All working must be clearly shown. [11 marks]

21. Solve the simultaneous equations $\begin{cases} 2x + 7y = 2 \\ 2x + 5y = 6 \end{cases}$. (2 marks)

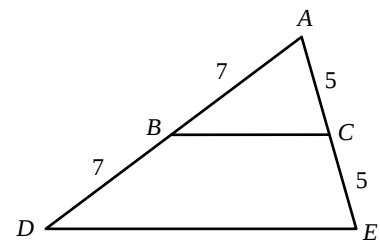
22. In the figure, ABC , BFE and CFD are straight lines.
 $\angle ABF = 108^\circ$, $\angle DFE = 58^\circ$ and $\angle EDF = 50^\circ$.
Prove that $AC \parallel DE$. (3 marks)



23. In the figure, PQR is a straight line. $\triangle PRS$ and $\triangle QRS$ are isosceles triangles. It is given that $PR = PS$, $QS = RS$ and $\angle RPS = 44^\circ$. Find x . (3 marks)



24. In the figure, ABD and ACE are straight lines. $AB = BD = 7$ and $AC = CE = 5$. State whether $\triangle ABC$ and $\triangle ADE$ are congruent or similar triangles, and give reason. (3 marks)



END OF PAPER