30 APR 2026

2025 – 2026 Academic Year

Grade 9 Mathematics Chapter Test 8

Name: _____(____) Marks: _____ / 35

Class: _____ Date: _____

Content: Ch.7 Areas and Volumes (III) Parent's Signature: _____

Ch.12 Introduction to Probabilities

Time allowed: 40 minutes

This paper must be answered in English

Instructions

1. This paper consists of 2 sections, Section A and Section B.
2. There are 9 questions in this paper.
3. Answer all the questions.
4. Use of HKEAA approved calculator is allowed.
5. Write your answers in this question-answer paper.

   (a) Multiple choice questions

   Mark your answer by filling the '☐' with an HB pencil, e.g.:

   2 + 3 =

   ☐ A. 4 ■ B. 5 ☐ C. 6 ☐ D. 7

   (b) Other types of questions

   Write your mathematical expressions, answers and statements/conclusions in the space provided. There is NO need to show the rough work.

6. Unless otherwise specified, numerical answers should be either exact or correct to 3 significant figures.
7. The diagrams in this paper are not necessarily drawn to scale.
8. Do your rough work in the rough worksheet provided.

Teacher's Use Only		
Question No.	Max. marks	Marks
Section A		
1 - 5 **Sub-total**	**10**	
Section B		
6	4	
7	6	
8	8	
9	7	
Sub-total	**25**	

Section A: Multiple-choice Questions (10 marks)

1. 7♣♥ is a 3-digit number, where ♣ and ♥ are integers from 0 to 9 inclusive. Find the probability that the 3-digit number is divisible by 7.

☐ A. $\frac{3}{20}$

☐ B. $\frac{13}{100}$

☐ C. $\frac{7}{50}$

☐ D. $\frac{3}{25}$

2. Two numbers are randomly drawn at the same time from nine balls numbered 2, 4, 6, 10, 12, 14, 16, 18, 22. Find the probability that the two numbers drawn are consecutive even integers.

☐ A. $\frac{1}{2}$

☐ B. $\frac{1}{4}$

☐ C. $\frac{1}{6}$

☐ D. $\frac{2}{9}$

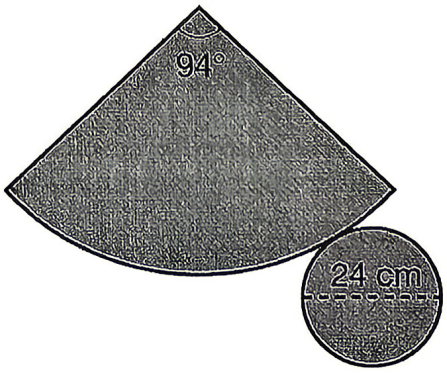
3. The figure below shows the net of a right circular cone. The base diameter of the cone is 24 cm. The angle of the sector of the net is 94°. Find the volume of the right circular cone, correct to the nearest cm^3.

☐ A. 3134 cm^3

☐ B. 4726 cm^3

☐ C. 6690 cm^3

☐ D. 6930 cm^3



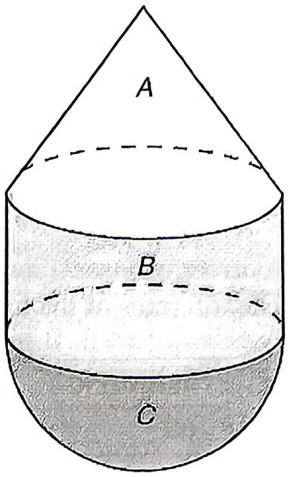
4. If the curved surface areas of A, B and C are equal, find the volume ratio of A to B to C.

☐ A. $\sqrt{2}:2:\sqrt{3}$

☐ B. $1:\sqrt{3}:\sqrt{2}$

☐ C. $\sqrt{5}:3:\sqrt{6}$

☐ D. $\sqrt{3}:3:2$



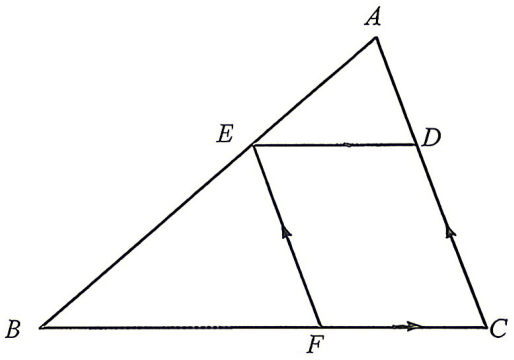
5. In the figure, AEB, ADC and BFC are straight lines. $AE:EB=4:7$ and $CDEF$ is a parallelogram. The area of $CDEF$ is 84 cm^2. Find the area of $AEFC$.

☐ A. 97.5 cm^2

☐ B. 108 cm^2

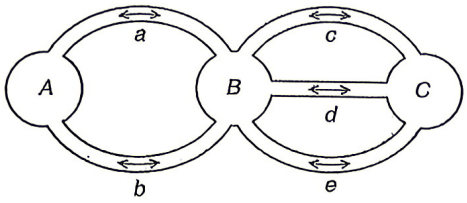
☐ C. 157.5 cm^2

☐ D. 182 cm^2



Section B: Conventional Questions (25 marks)

6. The figure shows that there are 2 highways a and b from City A to City B, and 3 highways c, d and e from City B to City C.



A driver chooses a route at random to travel from City A to City C via City B.
The toll rates of the highways are as follows:

Highway	a	b	c	d	e
Toll	\$25	free	\$15	\$30	\$20

(a) List all the possible outcomes by a tree diagram. (2 marks)

(b) Find the expected toll that the driver needs to pay. (2 marks)

7. The cardboard in Figure I is a net of the right pyramid in Figure II. *ABCD* is a rectangle.

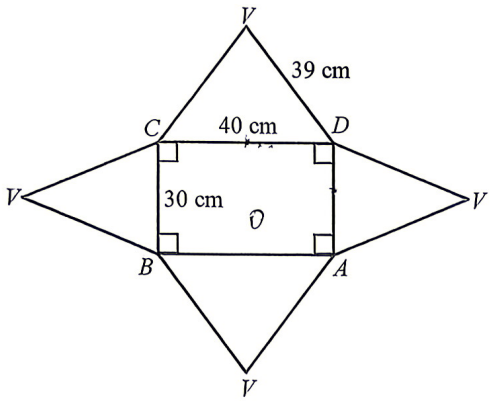


Figure I

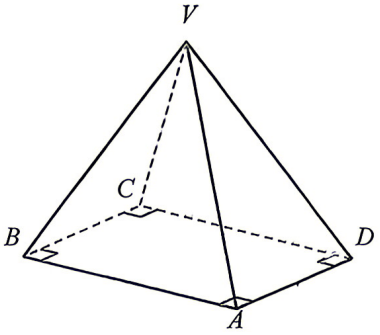
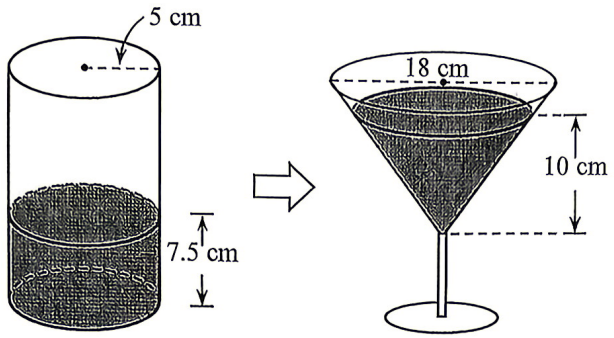


Figure II

(a) Find the total surface area of the pyramid. (3 marks)

(b) Find the volume of the pyramid. (3 marks)

8. A cylindrical can of base radius 5 cm contains soft drink to a depth of 7.5 cm. All the soft drink is poured from the can into an empty cup in the shape of an inverted right circular cone. The base diameter of the cup is 18 cm, and the depth of soft drink in the cup is 10 cm.



(a) Find the radius of the surface of soft drink in the cup. (3 marks)

(b) Some non-melted ice spheres of radius 3 cm are added into the cup and they are immersed in the soft drink. If the soft drink does not overflow, at most how many non-melted ice spheres can be added into the cup? (5 marks)

9. There are two solid spheres, which the surface area of the larger sphere is 4 times of that of the smaller sphere, and the radius of the larger sphere is 12 cm. The two spheres are then melted and recast into two solid right circular cones A and B. The height and the base radius of A are 10 cm and 12 cm respectively.

(a) Find the volume of B in terms of π. (4 marks)

(b) If the base radius of B is 15 cm, are A and B similar? Explain your answer. (3 marks)

END OF PAPER