

SUBJECT: MATHS

Contents:

Unit 12. Probability (p.250-269)

- ✓ 12.1. Mutually exclusive events
- ✓ 12.2. Independent events
- ✓ 12.3. Combined events
- ✓ 12.4. Chance experiments

Unit 13. Position and transformation (p.271-300)

- ✓ 13.1. Bearings and scale drawings
- ✓ 13.2. Points on a line segment
- ✓ 13.3. Transformation
- ✓ 13.4. Enlarging shapes

Unit 14. Volume, surface area and symmetry (p.301-315)

- ✓ 14.1. Calculating the volume of prisms
- ✓ 14.2. Calculating the surface area of triangular prisms, pyramids and cylinders
- ✓ 14.3. Symmetry in three-dimensional shapes

Instructions:

- 1) Students **MUST** complete the study guide before revision classes.
- 2) Students are **ALLOWED** to use calculators for problem-solving tasks.

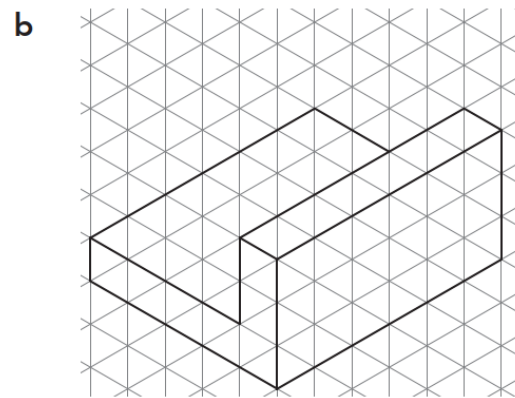
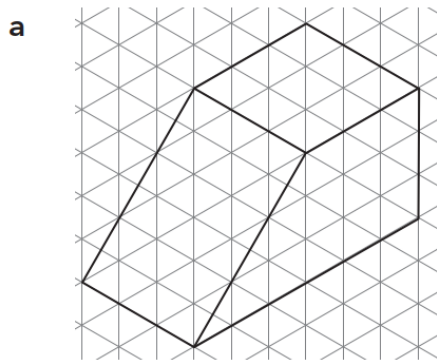
PART 1. MATHEMATICAL TERMS

NO.	TERMS	UNITS	DEFINITIONS	VIETNAMESE TRANSLATIONS
1	mutually exclusive events	12.1		
2	independent events	12.2		
3	relative frequency	12.4		
4	chance experiment	12.4		
5	bearing	13.1		
6	coordinate	13.2		
7	reflection	13.3		

8	translation	13.3		
9	rotation	13.3		
10	clockwise	13.3		
11	anticlockwise	13.3		
12	enlarge	13.4		
13	ray lines	13.4		
14	cross-section	14.1		
15	prism	14.1		
16	surface area	14.2		
17	pyramid	14.2		
18	cylinder	14.2		
19	isometric paper	14.3		
20	plane of symmetry	14.3		

PART 2. EXERCISES

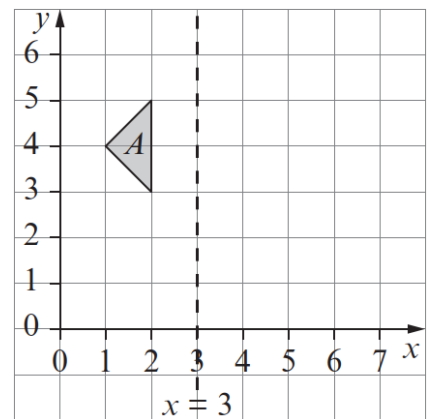
Question 1. Draw the plane of symmetry on each shape.



Question 2.

The diagram shows triangle A. Copy the diagram.

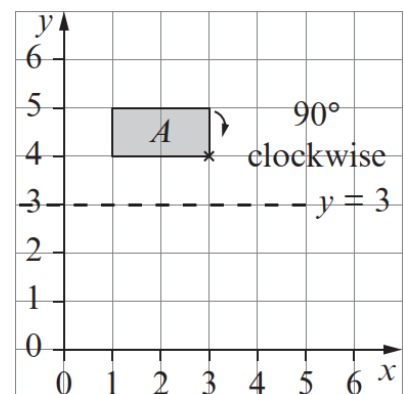
- Reflect triangle A in the mirror line $x = 3$. Label the image B.
- Translate triangle B using the column vector $\begin{pmatrix} 2 \\ -1 \end{pmatrix}$. Label the image C.



Question 3.

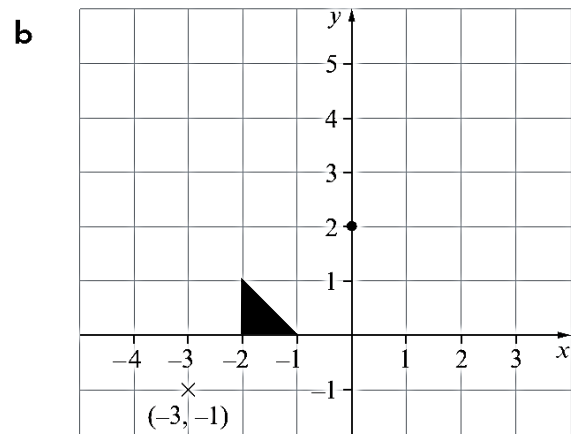
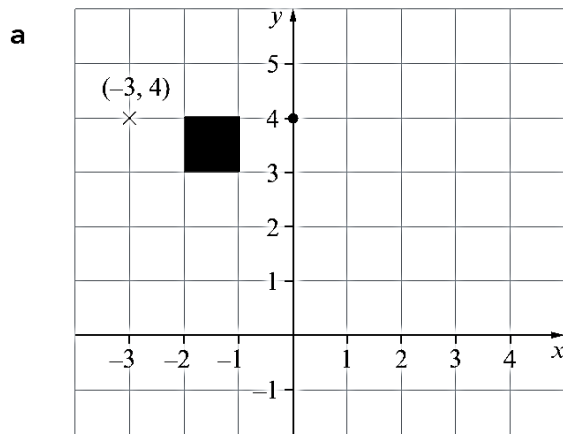
The diagram shows rectangle A. Copy the diagram.

- Rotate rectangle A 90° clockwise, centre (3, 4). Label the image B.
- Reflect rectangle B in the mirror line $y = 3$. Label the image C.



Question 4.

Copy and complete these enlargements using a scale factor of 3 and the centre of enlargement given. In each diagram, $\times$ marks the position of the centre of enlargement. The dot shows the position of one of the corners of the enlarged shape.



Question 5

The probability that Rajesh is late for school is 23%. What is the probability that Rajesh is not late?

%

Question 6

What is the probability of getting either a 4 or a 6 when rolling a fair dice?

Give your answer as a fraction in its lowest terms.

Question 7

Kaye took a book from a shelf containing school textbooks. The probability that she took a maths book is 0.25. The probability that she took an English book is 0.32.

What is the probability that she took either a maths or an English book?

P(maths or English book) =

Question 8

Kristyna's brother packs her school lunch each day.

The probability that she will have a banana in her lunch is $\frac{1}{4}$.

The probability of having an apple is $\frac{1}{3}$ and an orange is $\frac{1}{6}$.

What is the probability that on one particular day Kristyna will have either an apple or an orange?

Give your answer as a fraction in its lowest terms.

Question 9

The table shows the number of students who play sport at a school.

	Football	Swimming	Tennis
Girls	15	18	12
Boys	21	10	9

A girl is chosen at random. What is the probability that she swims?

Give your answer as a decimal.

Question 10

A coin is flipped twice.

Two events are:

F: the first flip is a tail

B: both flips are tails

F does not happen.

What is the probability that B happens?

Question 11

A bag contains seven red and six green balls.

A ball is chosen at random and then replaced.

Then a second ball is chosen at random.

Two events are:

F: the colour of the first ball is red

S: the colour of the second ball is green

If event F does not happen, what is the probability of event S happening?

$$P(S) = \frac{\boxed{}}{\boxed{}}$$

Question 12

Two fair dice are rolled and the numbers on the dice are added together.

Two events are:

S: the number is a square number

T: the number is a factor of 12

If event S happens, what is the probability of event T happening?

Give the answer as a fraction in its simplest form.

$$P(T) = \frac{\boxed{}}{\boxed{}}$$

Question 13

Kristyna's brother packs her school lunch each day.

The probability that she will have a banana in her lunch is $\frac{1}{4}$.

The probability of having an apple is $\frac{1}{3}$ and an orange is $\frac{1}{6}$.

What is the probability that Kristyna will have an apple today and a banana tomorrow?

Give your answer as a fraction in its lowest terms.

Question 14

A coin is altered so that it is biased and $P(\text{Tails}) = 0.3$
A biased die has $P(6) = 0.4$
So $P(\text{Tails and } 6) =$

Question 15

The probability that Ben wears a red T-shirt on any day is 0.2. The probability that he wears black trousers on any day is 0.35.
What is the probability that Ben wears a red T-shirt and black trousers at the same time?

Question 16

Mikel has five red, seven brown and eight blue T-shirts.
He also has two blue, three brown and five black jackets.
What is the probability that Mikel will be wearing the same colour T-shirt and jacket?

Question 17

Method of travel	Number of learners
Train	9
Car	4
Bus	5
Walked	6

The relative frequency of learners walking to school is %.

Question 18

Number of matches	29	30	31	32
Number of boxes	18	62	14	6

A box of matches is supposed to contain 30 matches. However, this number varies slightly between boxes.
The table shows a survey of 100 boxes.
If one of these boxes were selected at random, what is the probability that it would contain exactly 30 matches?
Give your answer as a **percentage**.
%

Question 19

The relative frequency of an event is 34%.

What is the total relative frequency of all other possible events?

%

Question 20

Holly surveyed learners about their favourite subject:

Five learners preferred science, eight preferred maths and seven preferred English

From this data, what is the experimental probability that the next student she questions will select maths?

Give your answer as a **percentage**.

%

Question 21

A map has a scale of 1 : 25 000.

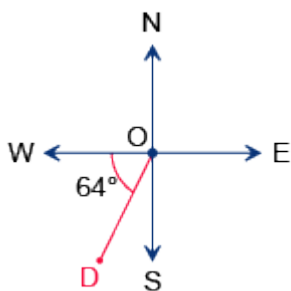
What is the real distance, in kilometres, between two towns that are 8 cm apart on the map?

Question 22

A map has a scale of 1 : 50 000. Two cities are 6 cm apart on the map. What is their real distance apart, in kilometres?

km

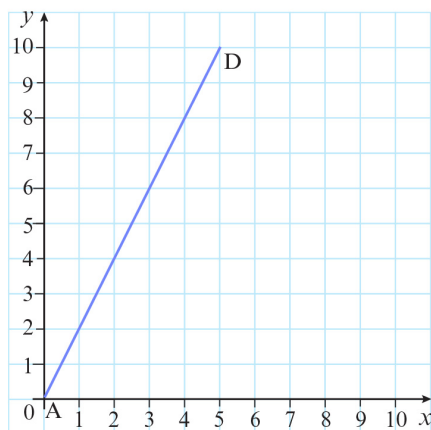
Question 23



Calculate the three-figure bearing from O to D.

Bearing of D = °

Question 24

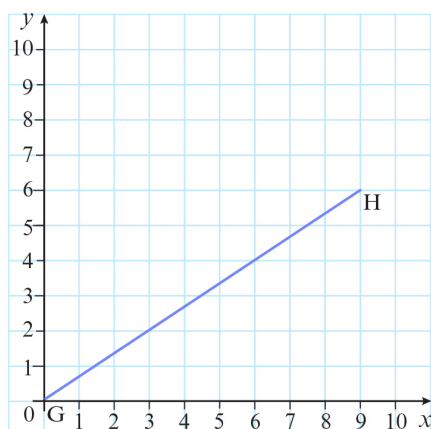


The point B lies $\frac{2}{5}$ of the way along AD.

Complete the coordinates of B.

(,)

Question 25



The point P lies $\frac{2}{3}$ of the way along GH.

Complete the coordinates of P.

(,)

Question 26

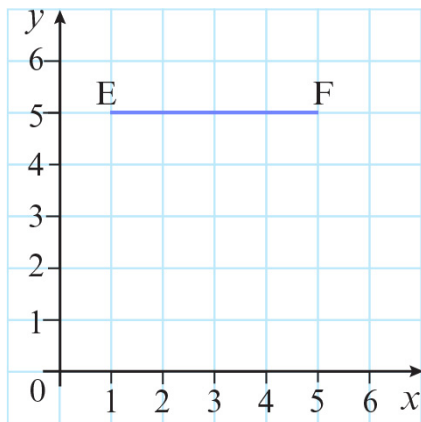


The point C lies $\frac{4}{5}$ of the way along AD.

Complete the coordinates of C.

(,)

Question 27



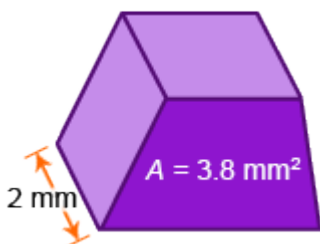
The line from E to F is extended to a point G.

F is $\frac{1}{3}$ of the way along EG.

What are the coordinates of G?

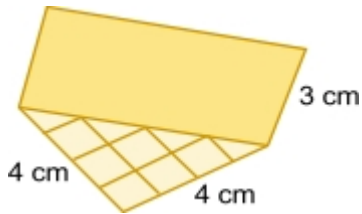
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Question 28



The volume of this prism is mm³

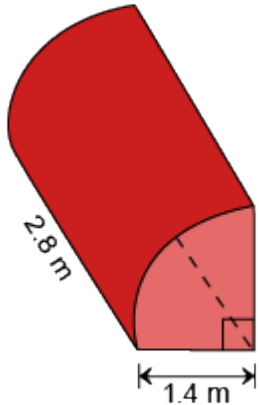
Question 29



The base of this prism is a right-angled triangle. Calculate its volume.

Volume = cm³

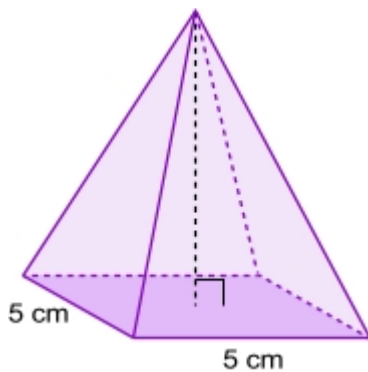
Question 30



The ends of this solid are quadrants. Find its volume correct to one decimal place.

m³ (to one decimal place)

Question 31



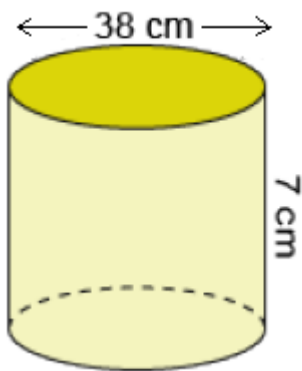
In a square pyramid the triangular faces are congruent.

One of the triangular faces has an area of 16 cm².

Calculate the surface area of the pyramid.

Surface area = cm²

Question 32



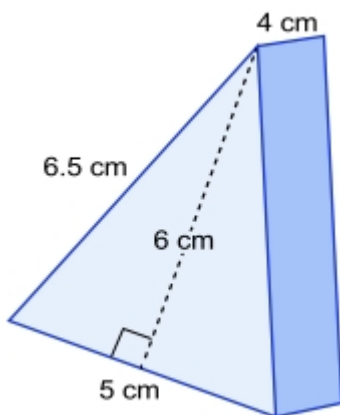
The cylinder is *open*.

Its diameter is 38 cm.

Curved surface area of open cylinder = cm^2

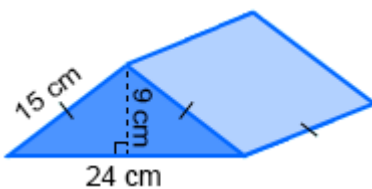
(Give your answer to the nearest whole number.)

Question 33



Surface area of triangular prism = cm^2

Question 34



What is the surface area of this triangular prism?

cm^2
