

SUBJECT: MATHS

Contents:

Unit 11. Ratio and proportion

- ✓ 11.1. Using ratios (p.237 - 242)
- ✓ 11.2. Direct and inverse proportion (p.243 - 248)

Unit 12. Probability

- ✓ 12.1. Mutually exclusive events (p.252 - 255)
- ✓ 12.2. Independent events (p.256 - 258)
- ✓ 12.3. Combined events (p.259 - 263)
- ✓ 12.4. Chance experiments (p.264 - 268)

Unit 13. Position and Transformation

- ✓ 13.1. Bearings and scale drawings (p.272 - 277)
- ✓ 13.2. Points on a line segment (p.278 - 283)
- ✓ 13.3. Transformations (p.284 - 291)
- ✓ 13.4. Enlarging shapes (p.292 - 298)

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	ratio	11.1		
2	proportion	11.1		
3	direct proportion	11.2		
4	inverse proportion	11.2		
5	probability	12		
6	outcome	12		
7	mutually exclusive events	12.1		
8	independent events	12.2		

9	chance experiment	12.4		
10	relative frequency	12.4		
11	bearing	13.1		
12	scale drawing	13.1		
13	line segment	13.2		
14	point	13.2		
15	midpoint	13.2		
16	vertical distance	13.2		
17	horizontal distance	13.2		
18	transformation	13.3		
19	reflect/ reflection	13.3		
20	translate/ translation	13.3		
21	rotate/ rotation	13.3		
22	enlarge	13.4		

PART 2. EXERCISES

Note: Please, see next pages

Question 1

On a school excursion the teacher to learner ratio is 1 : 15.

If 165 learners are going on the excursion, how many teachers are needed?

Question 2

A 50 m length of pipe is cut in the ratio 3 : 2. What is the length of the longer piece?

Question 3

In a class of 33 students, the ratio of boys to girls is 4 : 7.

How many girls are in the class?

Question 4

Salma mixes water and juice concentrate in the ratio 4 : 1.

What is the total amount of juice drink she can make from 1 litre of juice concentrate?

Question 5

Sascha and Abby enter a competition. It costs \$10 for them to enter. Sascha pays \$6 and Abby pays the rest. They win a prize of \$25 000 and agree to share the money according to the ratio of their contribution.

How much does Abby win?

Question 6

The sides of a triangle are in the ratio 3 : 4 : 5. If the longest side measures 65 cm, what is the area of the triangle?

Question 7

The amount of money Jai earns is directly proportional to the hours he works.

If he earns \$40 in six hours, how much will he earn in 18 hours?

Question 8

The amount of hay in a barn will feed 40 cows for 12 weeks.
For how many weeks could you feed 15 cows with the same amount of hay?

Question 9

A recipe for lemon iced tea requires the juice of one lemon for every 1 litre of chilled tea. Assuming that there is about 50 ml of juice in each lemon, how many litres of iced tea can be made from 15 lemons?

Question 10

Sally is travelling at an average speed of 72 km/h and takes 4 h 12 min to travel from A to B. How long would the same journey take if the average speed was increased to 80 km/h? Answer to the nearest minute.

Question 11

It takes six people two hours to decorate a hall for a birthday party. How many minutes would it take ten people to decorate the hall?

Question 12

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

Question 13

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 14

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?

Question 15

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 16

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 17

The probability of selecting at random a red counter from a bag that contains red and yellow counters only is $\frac{2}{5}$. There are 27 yellow counters in the bag. What is the total number of counters in the bag?

Question 18

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 19

Adil writes the letters of the word PACIFIC on separate cards and puts them in a bag. He picks a card at random.

What is the probability that he chooses a card with either a C or a vowel?

Give your answer as a fraction in its lowest terms.

Question 20

A person can take their driving test as many times as needed in order to pass it.

The probability that Matteo passes his driving test on any one test is 0.8.

What is the probability that he passes his driving test on the second attempt?

Question 21

Two boats are 50 km apart. Boat A is due west of B.

Boat A sails on a bearing of 060° and boat B sails on a bearing of 300° . Using a scale drawing, show that the boats will collide and find the distance from A's initial position at which this will happen. Give your answer to the nearest kilometre.

Question 22

A plane flies 60 km on a bearing of 260° and then changes direction and flies for 100 km on a bearing of 310° . How far will it be from its starting point? Give your answer to the nearest kilometre.

Question 23

A plane left New York and flew SW at 250 km/h.

Using a scale drawing, work out how far south of New York the plane was, to the nearest kilometre, after one hour?

Question 24

Town B is 250 km from town A on a bearing of 080° .

Town C is 250 km from town B on a bearing of 220° .

Using a scale drawing, work out the distance between town A and town C. Give your answer to the nearest kilometre.

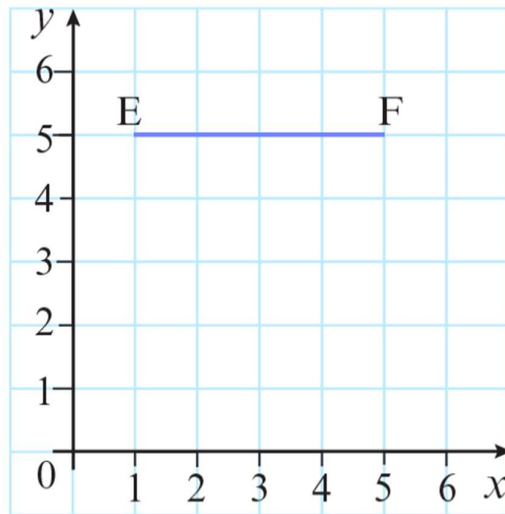
Question 25

Two ships, A and B, left port travelling at the same speed on bearings of 330° and 030° respectively.

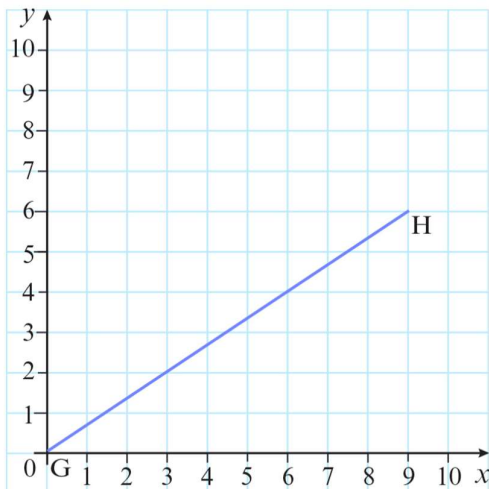
Work out the bearing of ship A from ship B after one hour.

Question 26

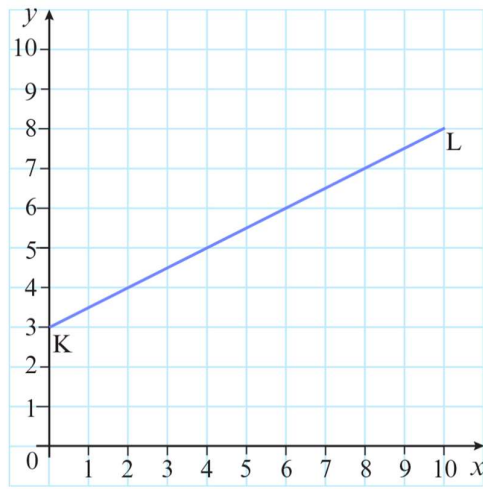
The point B lies $\frac{2}{5}$ of the way along AD.
What are the coordinates of B?

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?

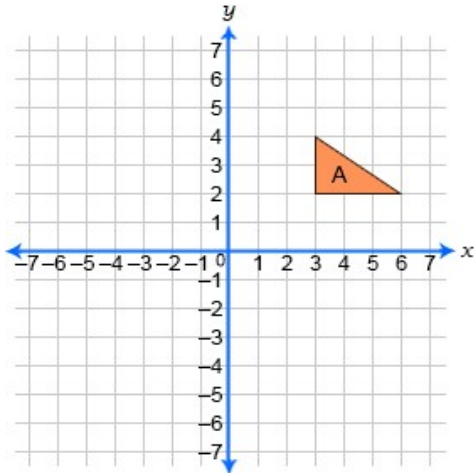
Question 28

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

Question 29

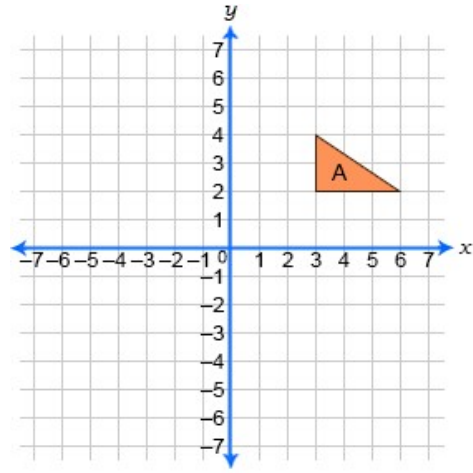
The point M lies $\frac{1}{5}$ of the way along KL.
What are the coordinates of M?

Question 30



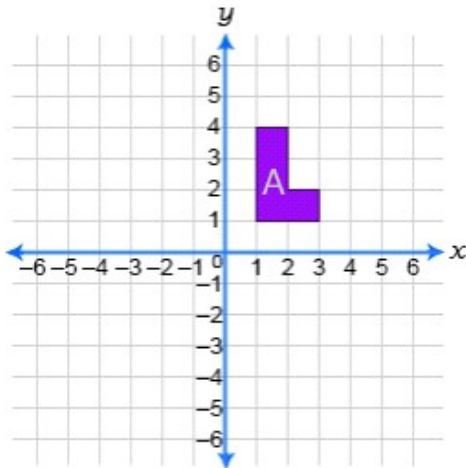
Draw the image of A after rotation through 90° clockwise, centre $(0, 0)$

Question 31



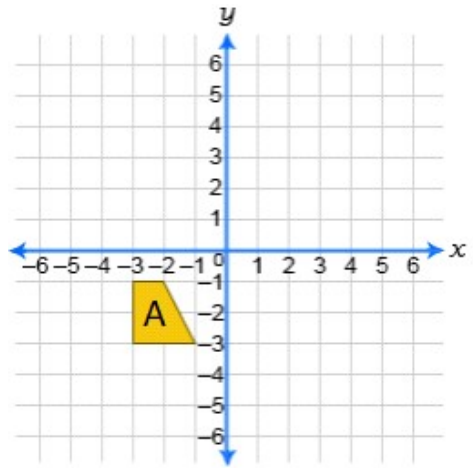
Draw the image of A after rotation through reflection in line $x = 1$

Question 32



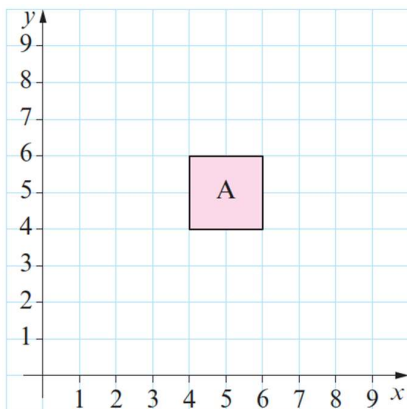
Draw the image of A after a rotation of 90° anticlockwise, centre $(0, 0)$, followed by a reflection in the x-axis.

Question 33



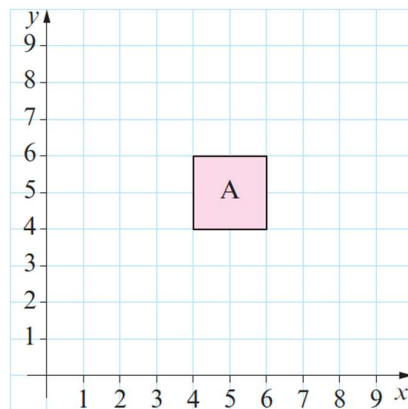
Draw the image of A after a rotation of 180° are $(5, 1)$. Give the coordinates of the centre of rotation.

Question 34



Draw an enlargement of the shape with scale factor 2, centre $(7, 5)$.

Question 35



Draw an enlargement of the shape with scale factor 3, centre $(5, 6)$.