SUBJECT: MATHS

Contents:

Unit 13. Probability

- ✓ 13.2. Experimental and theoretical probabilities (p.282-287)

Unit 14. Position and transformation

- ✓ 14.1. Bearings (p.290-297)
- ✓ 14.2. The midpoint of a line segment (p.298-303)
- ✓ 14.3. Translating 2D shapes (p.304-309)
- ✓ 14.4. Reflecting shapes (p.310-317)
- ✓ 14.5. Rotating shapes (p.317-323)
- ✓ 14.6. Enlarging shapes (p.324-329)

Unit 15. Distance, area and volume

- ✓ 15.1. Converting between miles and kilometres (p.331-335)

Instructions:

1) Students MUST complete the study guide before revision classes.

2) Students are NOT ALLOWED to use calculators for problem-solving tasks.

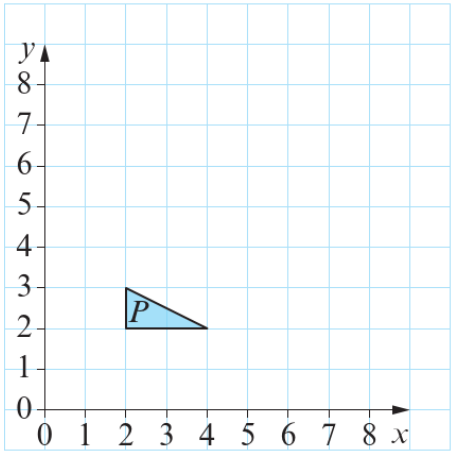
PART 1. MATHEMATICAL TERMS

NO.	TERMS	UNITS	DEFINITIONS	VIETNAMESE TRANSLATIONS
1	**experimental probability**	13.2		
2	**theoretical probability**	13.2		
3	**bearing**	14.1		
4	**line segment**	14.2		
5	**midpoint**	14.2		
6	**column vector**	14.3		
7	**congruent**	14.3		
8	**image**	14.3		

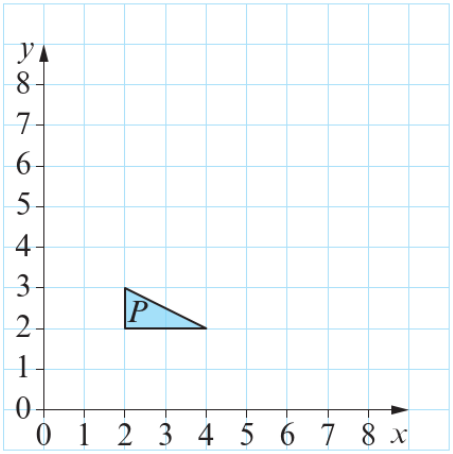
9	**object**	14.3		
10	**translate**	14.3		
11	**mirror line**	14.4		
12	**reflect**	14.4		
13	**clockwise**	14.5		
14	**anticlockwise**	14.5		
15	**centre of rotation**	14.5		
16	**enlargement**	14.6		
17	**centre of enlargement**	14.6		
18	**scale factor**	14.6		
19	**kilometre**	15.1		
20	**mile**	15.1		

PART 2. EXERCISES

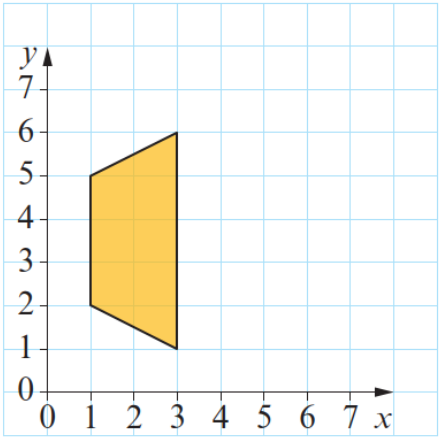
Question 1: Draw the image of P after a translation by the vector $\begin{pmatrix} 2 \\ -2 \end{pmatrix}$



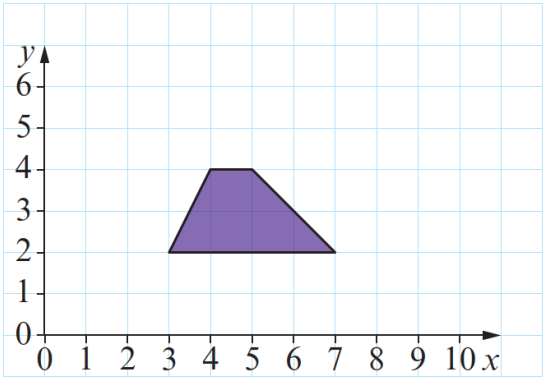
Question 2: Draw the image of P after a translation by the vector $\begin{pmatrix} -1 \\ 3 \end{pmatrix}$



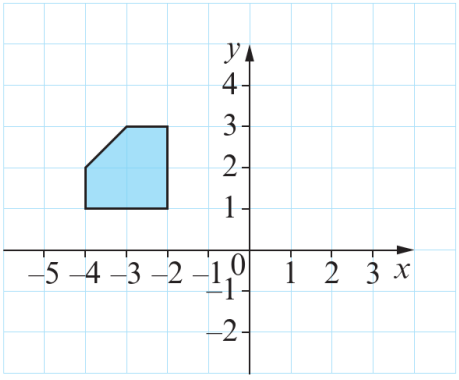
Question 3: Draw the image of this shape after a reflection in the mirror line x = 3



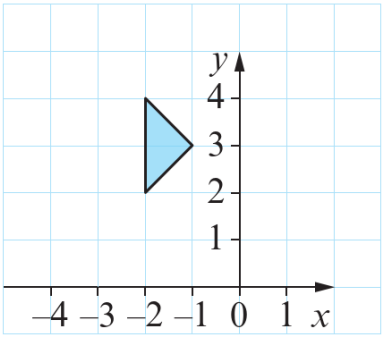
Question 4: Draw the image of this shape after a reflection in the mirror line y = 4



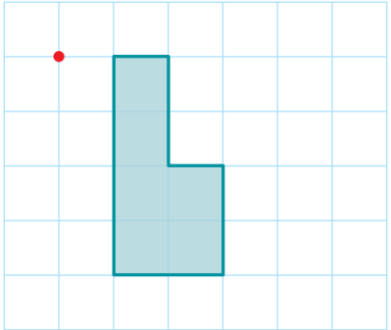
Question 5: Draw the image of this shape after a rotation 90º clockwise about the centre of rotation (-2, -1)



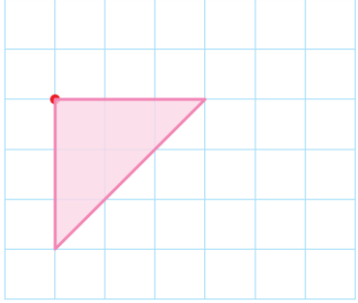
Question 6: Draw the image of this shape after a rotation 90º anticlockwise about the centre of rotation (-2, 2)



Question 7: Enlarge the shape with scale factor 3 from the centre of enlargement



Question 8: Enlarge the shape with scale factor 2 from the centre of enlargement



Question 9

Hans drew a counter out of a bag, recorded its colour and then replaced it.

He did this 20 times and recorded the results.

Red	7
Blue	11
Yellow	2

From this data, what is the probability that the next counter will be red?

Give your answer as a *fraction* in its simplest form.

Question 10

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 11

Bo rolled a dice 200 times. His results are shown in this table.

Score	1	2	3	4	5	6
Frequency	26	41	28	35	31	39

What is the difference between the experimental probability of getting an odd number and the theoretical probability?

Give your answer as a decimal.

Answer:

Question 12

Hani flipped a coin to see if it was biased.

Here are his results.

	Heads	Tails
Frequency	68	52

What is the difference between the experimental probability of getting a tail and the theoretical probability?

Give your answer as fraction in its simplest form.

Question 13

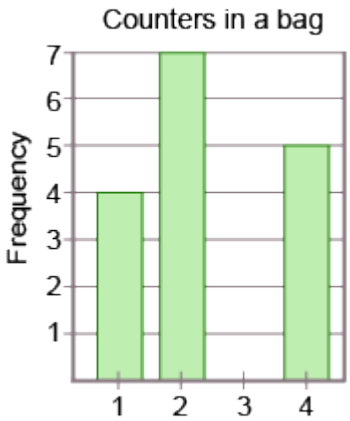
Enzo's football team have played 25 matches this season. Their results are shown in this table.

	Win	Lose	Draw
Frequency	15	6	4

What is the probability that Enzo's football team will win their next match?

Give your answer as fraction in its simplest form.

Question 14



There are four types of counters in a bag, each showing a number from 1 to 4.

The table shows the results of an experiment where a counter was withdrawn and then replaced, and its number recorded.

What is the theoretical probability that the next counter will be a 4? Give an exact answer as a *decimal*.

Question 15

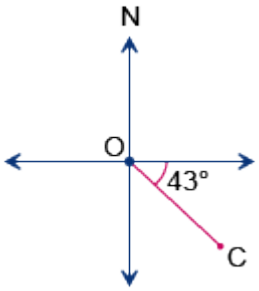
Yen wants to find the experimental probability of getting a total score of 7 when she rolls two dice.
She rolls two dice together and records her results after 50, 100, 150 and 200 rolls.

Number of rolls	50	100	150	200
Frequency of 7	5	14	22	30

Use Yen's results to find the experimental probability of getting a total score of 7 on her two dice.

Give your answer as a decimal to two decimal places.

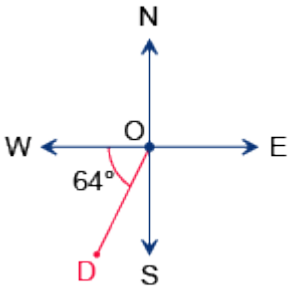
Question 16



Calculate the three-figure bearing from O to C.

Bearing of C = [ ]°

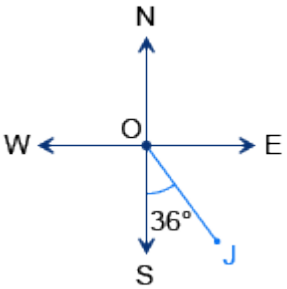
Question 17



Calculate the three-figure bearing from O to D.

Bearing of D = [ ]°

Question 18



Calculate the three-figure bearing from O to J.

Bearing of J = [ ]°

Question 19

C is (6, 5) and D is (4, 3).

The average of the *x*-values $= \frac{6+4}{2}$

$=$ [ ]

Question 20

The midpoint of AB is (4, 5). A is the point (1, 3).

What is the x-coordinate of B?

[ ]

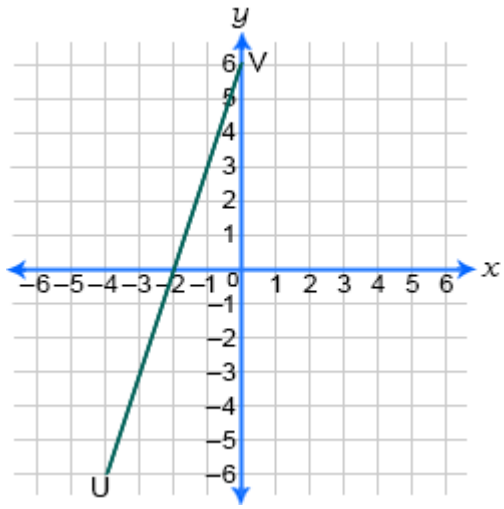
Question 21

The midpoint of AB is (4, 5). A is the point (1, 3).

What is the *y*-coordinate of B?

[ ]

Question 22



Midpoint of UV = (,)

Question 23

The endpoints of a line segment are G(6, y_1) and H(8, −1).

The midpoint of GH is M(7, 2.5).

Calculate the value of y_1, the missing y–coordinate of G.

y_1 =

Question 24

Enter both numbers to complete this conversion from kilometres to miles.

152 km = 152 × $\frac{\square}{8}$ = miles

Question 25

Enter both numbers to complete this conversion from miles to kilometres.

12 miles = 12 × $\frac{\square}{5}$ = km

Question 26

Enter a number to complete this conversion from kilometres to miles.

112 km = 112 × $\frac{5}{8}$ = miles

Question 27

How many metres is the same as 5 miles?

metres

Question 28

How many miles is the same as 56 kilometres?

miles