

MATHEMATICS TEST

Year 9 – Part B

The problems require complete solutions.

Your solutions should be clear enough for another person to read and understand what you mean. It is important that you show *all* your workings. You can earn points for partially worked problems.

The points total for each correctly solved problem will be shown beside each problem.

The problems are *not* listed according to their degree of difficulty.

All calculations and answers should be written on paper that is handed in at the end of the test.

The test packet must be handed in with your solutions.

You may use a calculator and a ruler.

Time: 80 minutes.

Name: _____

School: _____ Class: _____

Date of birth: Year _____ Month _____

Day _____

Girl

☐

Boy

☐

1.



- a) Hassan bought a shirt in the sale that originally cost 300 kr. What did he have to pay for it in the sale? Show your workings.

(2 p)

- b) How does this price tag compare with the reduction on the sign above? Explain your reasoning and show your workings.



(2 p)

2. Alfred and Eva have bought food for a party which they and three friends, Cilla, David and Eric are going to give. Alfred had also bought items for 265 kr and Eva for 95 kr. All five are going to share the costs and share alike. By means of an example explain how they can share the payments and show your workings.

(4 p)

3. Describe three daily events which lead to each of the following calculations:

a) $20 - 6.50 = 13.50$

(1 p)

b) $0.8 \cdot 18.50 = 14.80$

(1 p)

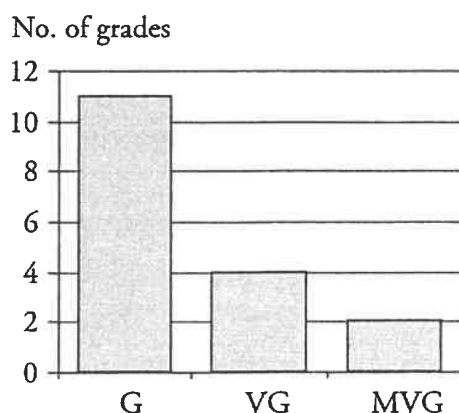
c) $14.5/0.5 = 29$

(1 p)

4. Is it possible for a triangle to have a right angle, a obtuse angle and an acute angle?
State reasons for your answer. (2 p)
5. A company wants to make juice cartons that contain 30 cl.
Suggest suitable measurements. Explain how you have arrived at these measurements and draw a figure showing the carton and its measurements. (3 p)



6. When admitting students for a Senior High School, their grades will be transformed into a merit value. As a result a Pass with special distinction (MVG) is awarded 20 points, a Pass with distinction (VG) receives 15 points and a Pass (G) is worth 10 points. The merit value is the total number of points received for *the best 16 subjects*.
- a) What is the highest merit value a student can receive?
Show your workings. (2 p)
- b) Work out the merit value for the student shown in the diagram.
Note that the student has been graded in 17 subjects.
Show your workings. (2 p)



7. Students in a class answered the question “How many brothers and sisters do you have?” according to the table below:

No of brothers & sisters	Answers	Frequency
0	II	2
1	IIII	5
2	IIII II	10
3	II	2
4	I	1

- a) How many students have 3 brothers & sisters? (1 p)

- b) A student has worked out the average number of brothers & sisters as follows:

$$2 + 5 + 10 + 2 + 1 = 20$$

$$\text{average} = \frac{20}{5} = 4$$

How can you *immediately* see that the answer is wrong? (1 p)

- c) Make a correct calculation. (2 p)

8. There are 11 people working in a company. Their monthly salaries are:

15 000	13 000	47 000	15 000
13 000	55 000	15 000	13 000
16 000	16 000	13 000	

Work out the average and the median monthly salary.

Which measurement – average or median best shows the salaries of the group?

State the reasons for your choice and explain why you believe the other measurement is not as good.

(4 p)

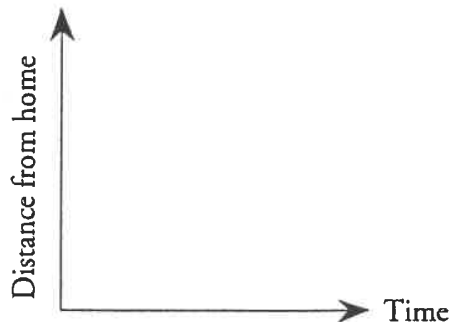
9. When 2 dice are thrown and the scores added it is possible to receive the following sums 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.
- a) Pelle says that the probability of obtaining the score 7 is $\frac{1}{11}$. Is Pelle correct? Explain why you agree or disagree with him. (2 p)
- b) Decide on what the probability is of obtaining a 9 score when throwing 2 dice. Show how you arrived at your answer. (2 p)



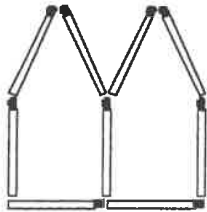
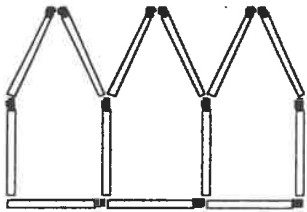
10. Veronica leaves her home to go to school. When she has gone half-way she remembers she has left a book at home. She returns home. When arriving back at her house it takes a couple of minutes to find the book. After that she runs straight to school without stopping.

Plot what has happened on a graph with similar axes to the diagram below.

(3 p)



11. With the help of matches it is possible to arrange pentagons in rows.

No. of pentagons	Illustration	No. of matches
1		5
2		9
3		13

- a) How many matches are required to make a row of 7 pentagons?

- b) A box of matches contains 50 matches. You have been asked to arrange a row of pentagons using these matches. How many figures are you able to make using the contents of the box.

- c) Write a formula that can be used to calculate the number of matches required when there are n pentagons in a row.

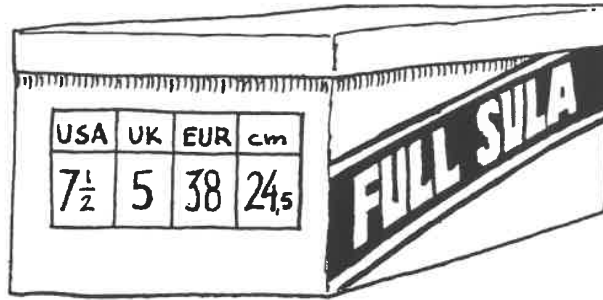
Explain
your answers
and show
your workings.

(2 p)

(2 p)

(2 p)

12.



The way to give shoe sizes vary from country to country.

In order to work out the *shoe size* in the USA you can use the following formula, where S is the shoe size and x is the foot length in centimetres:

$$S = \frac{15}{11} (x - 19)$$

- a) Bill's foot is 23.4 cm long.
What size will he need?
- b) Steve has bought a pair of size 9 shoes.
How long are his feet?

Show your
workings.

(2 p)

(2 p)

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