

Mathematics

Delprov D

ÅRSKURS

9

Elevens namn och klass/grupp

Instructions – Part D

This part consists of questions where digital devices and formula sheet are allowed.

Almost all the questions require complete solutions. Complete solution means that your working out must be clear enough so that someone else can read and understand what you mean. It is important that you show all your working out because you can be given points for partially answered questions.

No points are given for correct answers alone except for where the questions are marked: *Only the answer is required*.

The maximum number of points you can be given for your answer is shown after each question, for example, (2/1/0) means that the question is worth 2 E-points, 1 C-point and 0 A-points.

Aids: Digital devices and formula sheet.

Time allowed: 100 minutes.

*Solutions and answers must be written on a separate sheet of paper.
This booklet must be handed in together with the solutions.*

Name: _____

School: _____ Class: _____

Date of birth (year/month/day): _____

Good luck!

Illustrations: Jens Ahlbom



When assessing your work the teacher will take the following into account

- what mathematical knowledge you have demonstrated and how well you have answered the questions
- how well you have shown your line of thought and your calculations
- how well you have described the reasoning for your conclusions.

22. One of the wettest places on Earth is a mountain on Hawaii.

- a) On average, 450 inches of rain fall on the mountain per year. How many metres is that equivalent to?

1 inch = 25.4 mm

(2/0/0)

- b) During one year it rained on 350 of the year's 365 days. What percentage of the days of the year did it rain on?

(2/0/0)

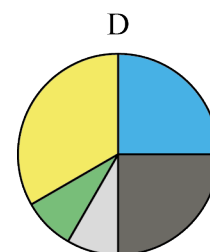
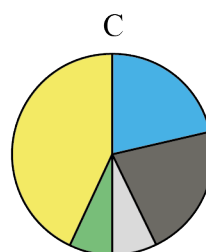
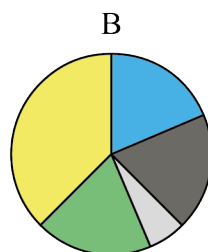
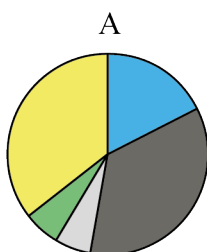
23. Leila's family has a leaking tap. A drop leaks out once every other second. A drop of water is equivalent to 0.05 ml. How many litres of water leak from the tap every 24 hours?



(3/0/0)

24. The table shows the mean value for how much water is used per person in Sweden every 24 hours. Which chart corresponds with the information in the table? Justify your answer.

Water consumption per person 24 hours	Amount (litres)
Washing dishes and laundry	30
Personal hygiene	60
Food and drink	10
Flushing the toilet	30
Other	10



(1/1/0)

25.

Bottle A



29.95

Swedish Crowns

Bottle B



23.50

Swedish Crowns

Mixture 1 + 7 means mixing 1 part fruit flavour drink with 7 parts water.

The fruit flavour drink must be mixed with water. The text on the bottles shows how many parts of fruit flavour drink and water should be mixed together. Which bottle has the lowest price for one litre of *fully-mixed* fruit flavour drink? Show the reasoning and calculations for your answer.

(1/2/0)

26.



A family of two adults and three youths are visiting Waterland. The adults pay full price. The youths get 30% discount on the price. All five pay a total of 1 025 Swedish Crowns. What does an adult ticket cost?

(1/1/1)

27. Waterland sells T-shirts at 120 Swedish Crowns each. The cost price is 40 Swedish Crowns per T-shirt. They have purchased 900 T-shirts.



- a) How much profit will they make (in Swedish Crowns) if they sell all of the T-shirts? (2/0/0)
- b) To cover the cost of purchasing the T-shirts, a certain number need to be sold. What is the lowest number of T-shirts that need to be sold? (0/1/0)
- c) How many per cent dearer is the sales price than the cost price? (0/2/0)

28. Ten friends visited a festival. The table shows how many concerts each one of the friends went to. There is no information in the table for three of the friends.

We know the following

- the mean value is 3.4 concerts
- the median is 3.5 concerts
- the type value is 2 concerts.

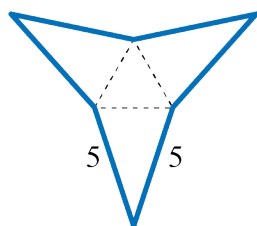
The table shows the individuals sorted into order according to the number of concerts they went on.

Person	A	B	C	D	E	F	G	H	I	J
Number of concerts	2	2	2		3		4		5	5

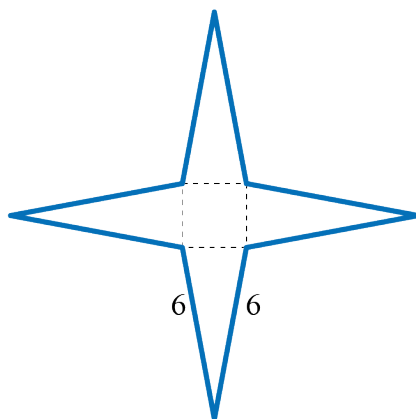
Use the information in the text and in the table to work out how many concerts person D, person F and person H went to. Show the reasoning and/or calculations for your answer.

(1/1/1)

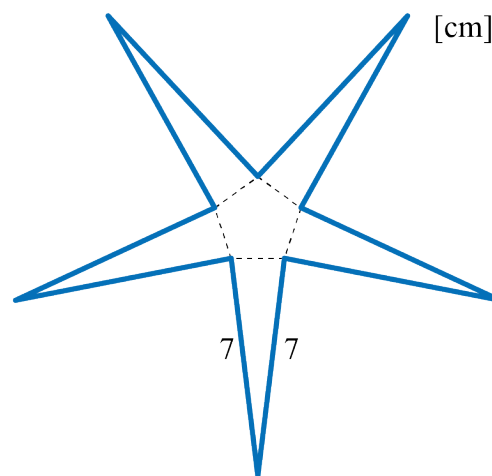
29. The figures show stars in a pattern.
Each point consists of an isosceles triangle.



Star with
3 points



Star with
4 points



Star with
5 points

The figures are not drawn to scale.

- What is the circumference of the star with 3 points?
Only the answer is required. (1/0/0)
- The star pattern continues in the same way. Calculate the circumference of a star with 9 points. (1/1/0)
- Write an algebraic expression for the circumference of a star with n number of points.
Only the answer is required. (0/1/1)

30. a) Death Valley in USA is one of the hottest places on Earth. The highest temperature recorded there is 134°F .

How many degrees is that equivalent to in $^{\circ}\text{C}$?

$$T_{\text{C}} = \frac{5(T_{\text{F}} - 32)}{9}$$

T_{C} = temperature in $^{\circ}\text{C}$

T_{F} = temperature in $^{\circ}\text{F}$

(1/0/0)

- Antarctica is one of the coldest places on Earth. The lowest temperature recorded there is -93.2°C .
How many degrees is that equivalent to in $^{\circ}\text{F}$?

(1/1/1)

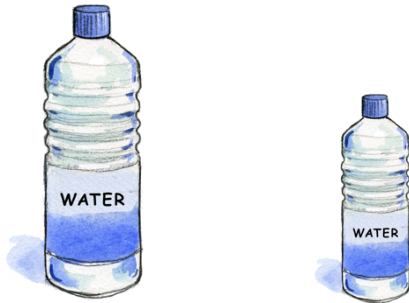
31. Noa has found a game that can end with winning or losing. There is equal probability of winning every time you play. The probability of winning twice in a row is 0.04. This can be written $P(\text{win, win}) = 0.04$.

What is the probability of first winning and then losing, i.e. $P(\text{win, lose})$?

(0/0/2)

32. A shop sells large and small bottles of water. A large bottle costs 15 Swedish Crowns and a small bottle costs 9 Swedish Crowns. One day the shop sold 93 bottles for a total of 1 065 Swedish Crowns. How many large bottles did the shop sell?

(0/2/2)



15 Swedish Crowns 9 Swedish Crowns

