

# Mathematics

Delprov D

Årskurs

9

---

Elevens namn och klass/grupp



## Instructions – Part D

Complete solutions are required for most of the tasks. A complete solution means that you have shown your work clearly enough for another person to read and understand it. It is important that you show all of your work. You can get points for a partly solved task.

No points are given for the correct answer on its own, other than in the tasks marked *Only the answer is required*.

The maximum number of points you can get for your solution is shown after each task. For example, (2/1/0) means that the task can give 2 E-points, 1 C-point and 0 A-points.

Aids: Calculator, ruler and formula sheet.

Time for the part: 100 minutes.

*Solutions and answers must be written on a separate sheet of paper, not in the test booklet. The test booklet is to be handed in along with your solutions.*

Name: \_\_\_\_\_

School: \_\_\_\_\_ Class: \_\_\_\_\_

Date of birth (year/month/day): \_\_\_\_\_

Good luck!

Illustrations: Jens Ahlbom



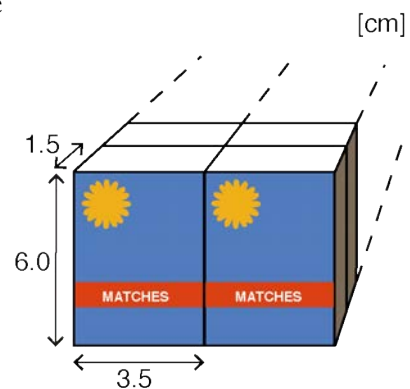
### When assessing your work, the teacher will consider

- what mathematical knowledge you have shown, and how well you have completed the tasks
- how well you have shown your work
- how well you have motivated the answers.

21. In a tent on the festival grounds food is served to 460 people. The selection is hamburgers, hot dogs and pasta salad. Of those eating in the tent, 60 % choose hamburgers and 150 people choose hot dogs.  
How many people choose pasta salad? (3/0/0)



22. A matchbox has the measurements 6.0 cm, 3.5 cm and 1.5 cm. Several matchboxes are put together in a package with the volume  $315 \text{ cm}^3$ , see figure.  
How many matchboxes are in the package? (2/0/0)

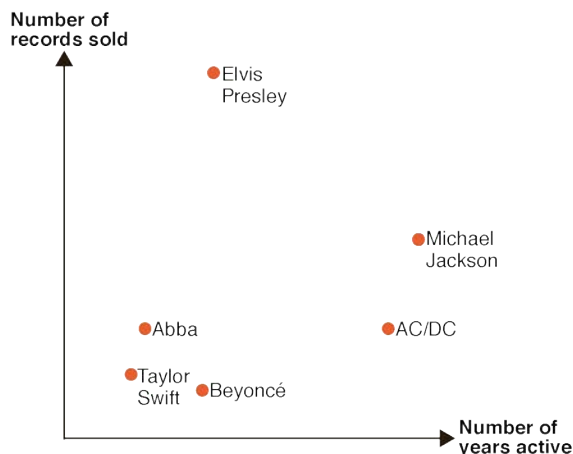


23. In a tent on the festival grounds festival shirts are sold for SEK 120 each. The purchase price is SEK 40 per shirt. They have purchased 900 festival shirts.

- a) What will the profit be (in SEK) if they sell all the festival shirts? (2/0/0)
- b) To cover the cost of purchasing the shirts they need to sell a certain amount. How many shirts do they need to sell? (0/1/0)
- c) In percent, how much higher is the selling price compared to the purchase price? (0/2/0)



24. Use the diagram to answer the following questions.



a) Which artists have sold an equal number of records?  
*Only the answer is required.*

(1/0/0)

b) Which artists, in average, have sold approximately the same number of records per active year? Motivate your answer.

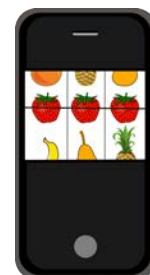
(0/1/1)

25. The band The Buz is going to the festival in a minivan. After driving  $\frac{2}{3}$  of the distance, they still have  $\frac{3}{7}$  of the diesel they had at the start of the journey. Will the diesel be enough to get them to the festival? Motivate your answer.



(0/2/0)

26. There is a competition at the festival where the winner gets to meet an artist. The competition is run using a gambling app. If you get three fruits of the same type in a row you win (see figure). There are 5 different types of fruit. One fruit of each type is randomly shown in each position. What is the probability of getting three fruits of the same type in a row?



(0/1/1)

27. Ten friends visited last year's music festival. The table shows how many concerts they each attended. The data for three of the friends is missing in the table.

We know that

- the mean was 3.4 concerts
- the median was 3.5 concerts
- the mode was 2 concerts.

The persons in the table are ordered by number of concerts attended.

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

Use the information and the table to determine how many concerts persons D, F and H may have attended.

Explain with reasoning and/or calculations.

(1/1/1)

28. There are different types of tickets to the festival. The festival runs for three days.

Ticket type	Price
<b>Festival pass</b> Entry for all days of the festival, 02.00 pm–11.30 pm	SEK 1 800
<b>One-day pass</b> Entry for one day of the festival, 02.00 pm–11.30 pm	SEK 800
<b>Evening ticket</b> Entry for one evening of the festival, 07.00 pm–11.30 pm	SEK 550



- a) Erik wants to go to the festival for one full day and two evenings. Which ticket or tickets should he buy in order to pay as little as possible?  
*Only the answer is required.* (1/0/0)
- b) On the first day, all types of tickets were sold. 1 500 festival passes, 200 one-day passes and a number of evening tickets were sold. In total, tickets worth SEK 3 027 200 were sold this day. How many evening tickets were sold on the first day? (3/0/0)
- c) On the last day, only one-day passes and evening tickets were sold. A total of 2 000 tickets were sold this day, at a total value of SEK 1 539 500. How many tickets of each type were sold? (0/1/3)

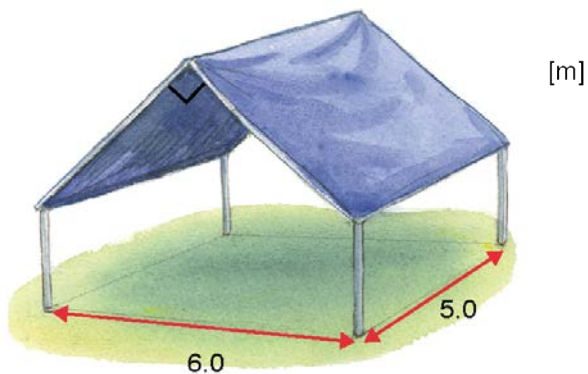
29. The festival has its own logo (see picture).  
The ratio between angle  $x$  and angle  $y$  is 5:8.  
What is angle  $x$ ?



(0/1/1)

30. Amina runs a small café at the festival and her piece of ground is 6.0 m x 5.0 m. She wants to put up a tarp roof to shelter the entire area. The angle at the central top of the roof has to be  $90^\circ$ .  
What is the minimum length and width of the tarp in order to cover the whole roof?

(0/2/2)



*The figure is not drawn to scale.*

