Mathematics

Delprov B

1a

Elevens namn och klass/grupp

Skolverket

Instructions – part B

Time for the test

60 minutes for part B.

Aids

The allowed aids on part B are a formula sheet and a ruler.

Tasks

For the tasks in this part, you only need to state your answers.
Write your answers in the test booklet.

The maximum number of points you can be given for your answer is shown after each task.

Grading limits

The test (parts B–D) gives a total maximum of 66 points.

Limit for test grade

E: At least 14 points.
D: At least 26 points, of which at least 9 points on level C or higher.
C: At least 34 points, of which at least 14 points on level C or higher.
B: At least 44 points, of which at least 4 points at level A.
A: At least 51 points, of which at least 8 points at level A.

Illustrations: Jens Ahlbom

1. The volume of one coffee scoop is the same as one tablespoon and one teaspoon combined. How many decilitres are 8 scoops of coffee?

Tablespoon	15 ml
Teaspoon	5 ml
Spice scoop	1 ml

Answer: _____ dl (1/0/0)

2. Simplify the expression $x + 3 + 2(3x + 4)$ as far as possible.

Answer: _____ (1/0/0)

3. Factor the expression $5x + 25$ by factoring out the largest possible factor.

Answer: _____ (1/0/0)

4. Charlie is going to hire a car. The basic charge is SEK 500. In addition, it costs SEK 35 for every mile she drives. What formula describes the total cost in SEK y for x miles that Charlie drives?
Circle your answer.

$y = 35 + x + 500$ $y = 500x + 35$ $y = 35x$

$y = 500 + 35x$ $y = 35x + 500x$ (1/0/0)

5. Lena has a bag with 2 yellow and 3 blue mittens. She takes 2 mittens out of the bag without looking at what colour they are. What calculation can be used to determine the probability of her taking out the two yellow mittens?
Circle your answer.

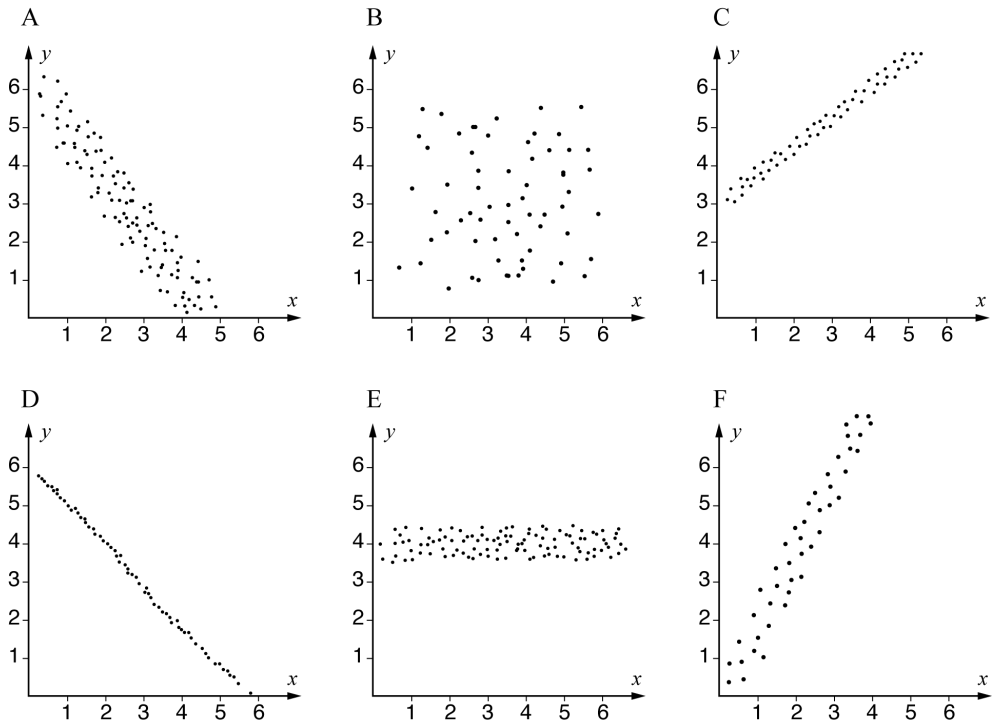
$\frac{2}{5} \times \frac{2}{5}$ $\frac{2}{5} \times \frac{1}{5}$ $\frac{2}{5} \times \frac{2}{4}$ $\frac{2}{5} \times \frac{1}{4}$ $\frac{3}{5} \times \frac{2}{4}$

(1/0/0)

6. It costs SEK 420 000 to purchase a particular car.
The value of the car will decrease by 15% per year.
Write a function y which describes the value of the car in SEK, x years after the purchase.

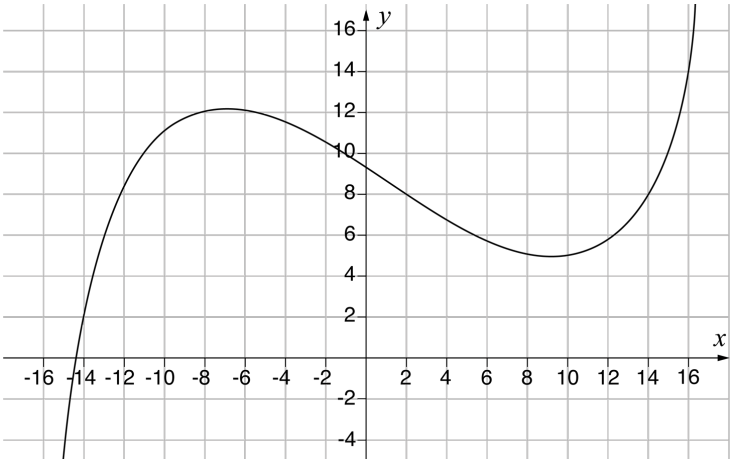
Answer: _____ (1/0/0)

7. The diagrams show six different correlations between the variables x and y.
Which of the diagrams A–F shows the strongest correlation?



Answer: _____ (1/0/0)

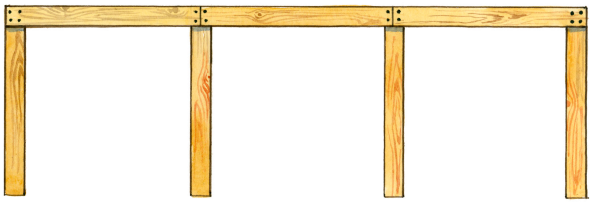
8. Below is the graph of the function $y = f(x)$



a) Determine $f(2)$ Answer: $f(2) =$ _____ (1/0/0)

b) Solve the equation $f(x) = 14$ Answer: $x =$ _____ (0/1/0)

9. Andreas is building a fence according to a certain model; see picture. The fence consists of vertical boards and horizontal boards, all of which have a length of 1 m. The picture shows a fence that is 3 m long and was built according to the model.



State a formula for the number of y boards needed to build an x metre long fence according to the model.

Answer: _____ (0/1/0)

10. Four different situations are presented below. State your answer by placing a cross for each situation if it can be described by a linear model or an exponential model.

	Linear model	Exponential model
The number of bacteria in a culture increases depending upon the time, as the number of bacteria doubles every hour.	☐	☐
The total weight of a flatbed truck increases depending upon the amount of sand loaded on the flatbed.	☐	☐
The volume of water in a bucket decreases depending upon the time, as the water runs out at 2 cl per minute.	☐	☐
The volume of a piece of dough increases depending upon the time, as the volume of the dough increases by 5% every ten minutes.	☐	☐

(0/2/0)

11. Write an expression in the empty parenthesis so that the equality applies.

$3(4x - 10) = 2(\quad\quad)$ (0/1/0)

12. Removed due to confidentiality

13. Nilo weighs n kg and Robin weighs r kg. Which of the following alternatives is/are *always* correct if you know that $n + 0{,}2n = r$?
Circle your answer(s).

A: Nilo weighs 20% more than Robin

B: Nilo weighs 0.2 kg more than Robin

C: Nilo's weight is 1.2 times Robin's weight

D: Robin weighs 20% more than Nilo

E: Robin weighs 0.2 kg more than Nilo

F: Robin's weight is 1.2 times Nilo's weight (0/1/1)

14. Write $2a + b$ in terms of a if

$a + b = 2$

Simplify as far as possible. Answer: _____ (0/0/1)

15. The following information is found in a newspaper:

The limit value

The gluten content may not exceed 20 mg gluten/kg in products labelled "gluten-free".

Source: Galore mars 2019

Determine the highest proportion of gluten allowed in gluten-free flour.
Answer in a percentage value. Answer: _____ % (0/0/1)

16. $f(x) = 2x - 4$ and $g(x) = 3x + 1$

Determine $f(g(2))$ Answer: $f(g(2)) =$ _____ (0/0/1)

PRIM gruppen