

Mathematics

Delprov B

1C

Elevens namn och klass/grupp

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 70 points.

Limit for test grade

E: At least 14 points.

D: At least 27 points, of which at least 12 points on level C or higher.

C: At least 35 points, of which at least 18 points on level C or higher.

B: At least 46 points, of which at least 6 points at level A.

A: At least 55 points, of which at least 11 points at level A.

1. Factor the expression $5x + 25$ by factoring out the largest possible factor. Answer: _____ (1/0/0)

2. What function corresponds to the graph in the coordinate system?
Circle your answer.

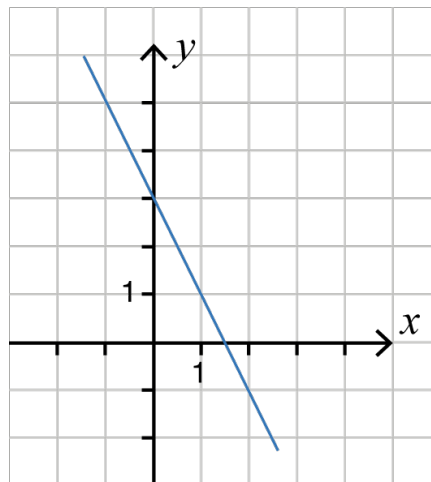
$y = -2x + 1.5$

$y = -2x + 3$

$y = -0.5x + 3$

$y = 2x - 1.5$

$y = 1.5x + 3$



(1/0/0)

3. 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.

$\frac{2}{5} \times \frac{2}{5}$

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

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

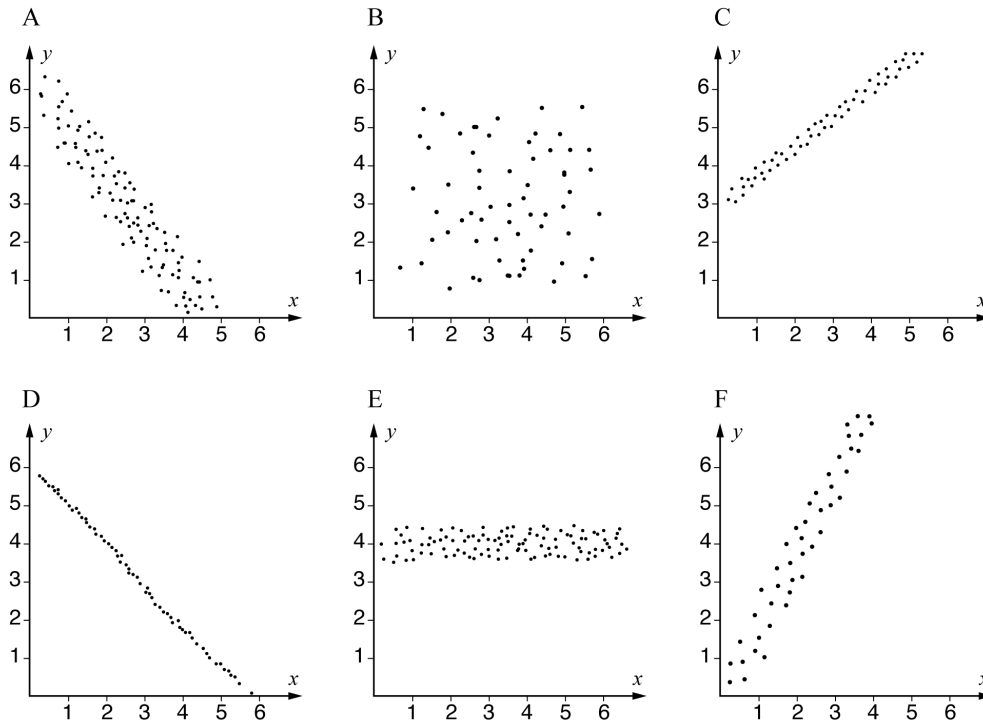
$\frac{2}{5} \times \frac{1}{4}$

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

(1/0/0)

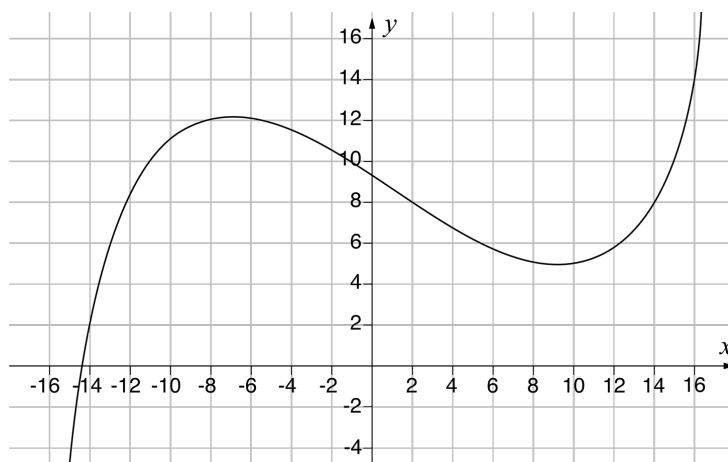
4. Simplify the expression $\frac{3a^7}{12a^5}$ as far as possible. Answer: _____ (1/0/0)

5. 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)

6. 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)

7. For vectors \vec{u} , \vec{v} and \vec{w} , the following applies:

$$\vec{u} = (2, 3)$$

$$\vec{v} = (1, 2)$$

$$\vec{w} = \vec{u} + \vec{v}$$

a) Write \vec{w} in coordinate form.

Answer: $\vec{w} =$ _____ (1/0/0)

b) Determine $|\vec{w}|$

Answer: $|\vec{w}| =$ _____ (0/1/0)

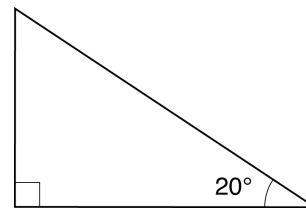
8. Four different situations are presented below. State your answer by placing a cross for each situation if it can be described by a linear, exponential or logarithmic model.

	Linear model	Exponential model	Logarithmic model
The total weight of a flatbed truck increases depending upon the amount of sand loaded on the flatbed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The braking distance for a car, depends upon the speed of the car squared.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The volume of a piece of dough increases depending upon the time, as the volume of the dough increases by 5% every ten minutes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The volume of water in a bucket decreases depending upon the time, as the water runs out at 2 cl per minute.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(0/2/0)

9. What expression has the same value as $\sin 20^\circ$?
Circle your answer.

$\cos 20^\circ$ $\tan 20^\circ$
 $\sin 70^\circ$ $\cos 70^\circ$ $\tan 70^\circ$



(0/1/0)

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

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

(0/1/0)

11. On a die, each face is a different colour. One face is red.

The probability of getting red three times in a row

when you roll the die is $\frac{1}{64}$

How many faces does the die have?

Answer: _____ (0/1/0)

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

$$a + b = 2$$

Simplify as far as possible.

Answer: _____ (0/0/1)

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

Determine $f(g(2))$

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

14. The expressions below have the same positive value of a .
What numbers should be in the boxes for the equalities to apply?

$$a^{\frac{1}{3}} = \square$$

$$a^{\frac{2}{3}} = 9$$

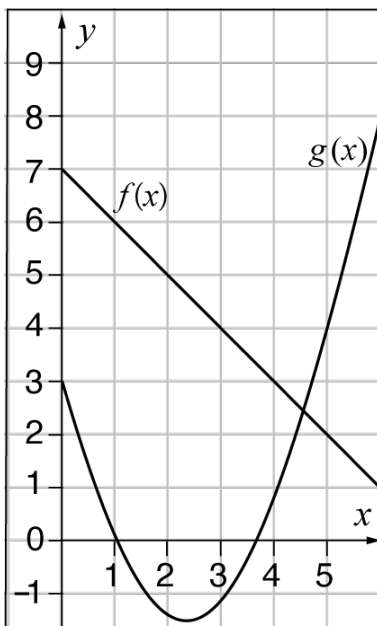
$$a = \square$$

(0/0/1)

15. Determine the value of a so that
the inequality $2x - a < 5$
has the solution $x < 7$

Answer: _____ (0/0/1)

16. Shadow the area in the coordinate system where $f(x) \leq y \leq g(x)$



(0/0/1)

