

# Released Assessment Questions, 2016

# ANSWERS

Grade 9 Assessment of Mathematics • Academic

## DIRECTIONS

### Answering Multiple-Choice Questions

Answer all multiple-choice questions. If you fill in more than one answer to a question, or leave a question blank, the question will be scored zero. Incorrect answers will also be scored zero.

### Answering Open-Response Questions

Do all of your work for each question in the space provided for the question **only**.

Write your solutions, including all calculations, clearly and completely.

### ATTENTION:

There are more open-response questions in this booklet than a regular booklet.

**Record ALL  
your answers to  
multiple-choice and  
open-response questions  
in this booklet.**

Education Quality and  
Accountability Office



**You are now ready to start.**



Please read the questions in the *Question Booklet*; then fill in your answers below.

To indicate your answer, use a pencil to fill in the appropriate circle below completely.

Like this: ●

Not like this: ⊗ ✓ ◐ ○

Cleanly erase your answer if you wish to change it and fill in the circle for your new answer.

Fill in only **one** circle for each question.

**1** (a) (b) (c) (d)

**2** (a) (b) (c) (d)

**3** (a) (b) (c) (d)

**4** (a) (b) (c) (d)

**5** (a) (b) (c) (d)

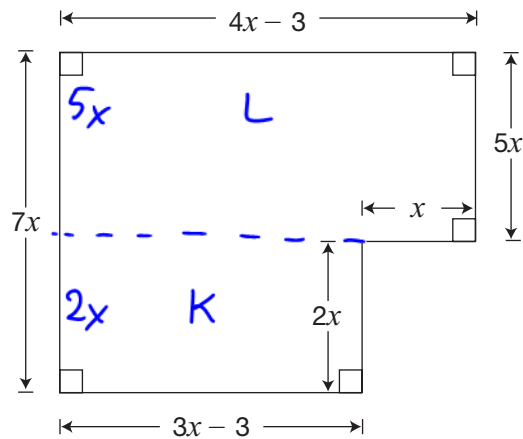
**6** (a) (b) (c) (d)

**7** (a) (b) (c) (d)

**8** (a) (b) (c) (d)

## 9 Floored Areas

The diagram of the floor shown below has algebraic expressions for the lengths of its sides, in metres.



Determine an unsimplified expression for the **total area** of the floor,  $A$ , in  $\text{m}^2$ .

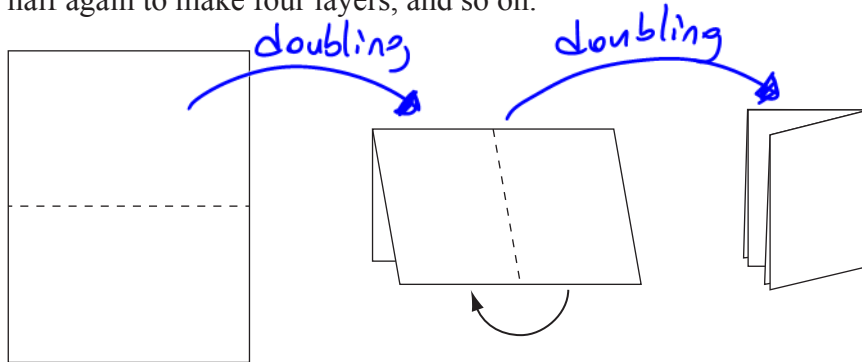
$$A = 26x^2 - 21x$$

Simplify your expression fully. Show your work.

$$\begin{aligned}
 A_{\text{total}} &= \text{Area}_K + \text{Area}_L \\
 &= 2x(3x-3) + 5x(4x-3) \\
 &= 6x^2 - 6x + 20x^2 - 15x \\
 &= 26x^2 - 21x
 \end{aligned}$$

### 10 Folding Time

A piece of paper is folded in half, which results in two layers of paper. Then the paper is folded in half again to make four layers, and so on.



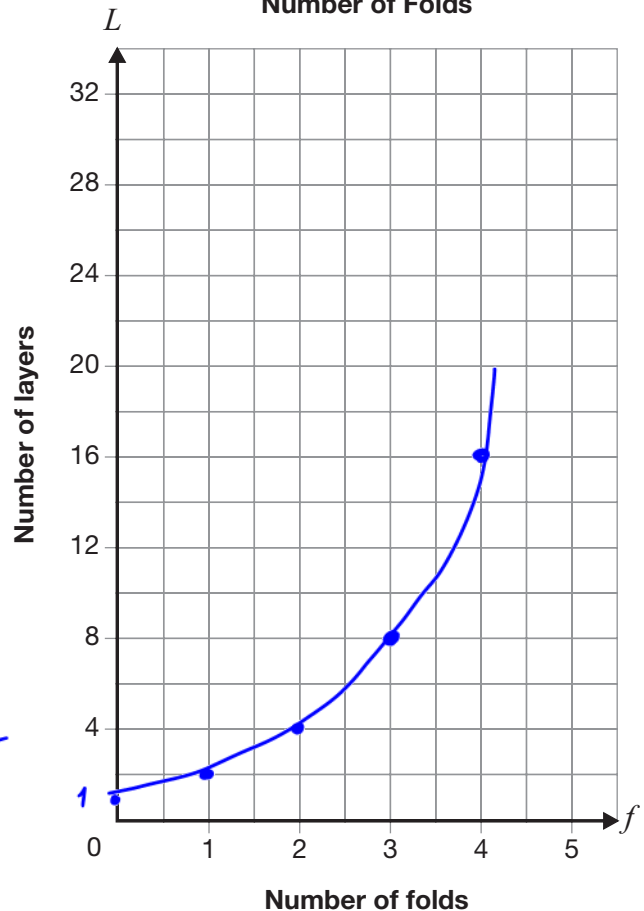
The number of layers and the number of folds are recorded in the chart.

Number of folds	Number of layers
0	1
1	2
2	4
3	8
4	16

*1<sup>st</sup> difference*

1  
2  
4  
8

Number of Layers vs. Number of Folds



Determine whether this relationship is linear or non-linear.

Circle one:    Linear    Non-linear

Justify your answer.

You have the option of using the grid if you wish.

① Since first differences are not the same, it is non-linear

② Line of best fit is a curve

## 1 Theatre Programs

A company charges schools to print programs for school plays. Information about the linear relationship between the total cost and number of programs printed is shown below.

	Number of programs, $n$	Total cost, $C$ (\$)
A	350	220
B	500	250
	750	300

Determine an equation to represent this relationship.

Show your work.

You have the option of using the grid if you wish.

Step 1  $A(350, 220)$   $B(500, 250)$

$$m = \frac{250 - 220}{500 - 350}$$

$$= \frac{30}{150}$$

$$= \frac{1}{5} \text{ or } 0.2$$

Step 2

$$y = mx + b \quad m = 0.2 \quad A(350, 220)$$

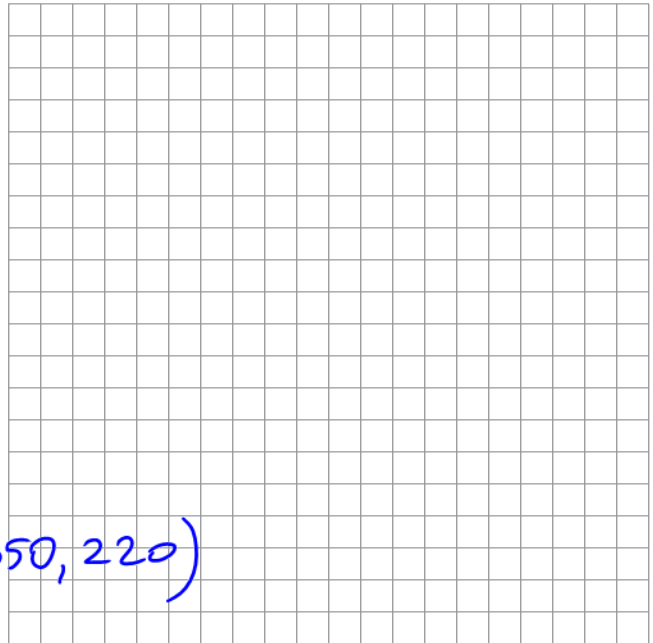
$$220 = 0.2(350) + b$$

$$220 = 70 + b$$

-70      -70

$$150 = b$$

$$\therefore y = \frac{1}{5}x + 150$$



**12 Standard Lines**

Two lines are represented by the equations below.

Line 1:  $x - 2y + 6 = 0$

Line 2:  $3x + 6y - 18 = 0$

Determine which line could be represented by  $y = -\frac{1}{2}x + 3$ .

Circle one:      Line 1      Line 2      Both

Justify your answer. Include information for both Line 1 and Line 2.

Line 1:  $x - 2y + 6 = 0$

$$\frac{-2y}{-2} = \frac{-x - 6}{-2}$$

$$y = \frac{1}{2}x + 3$$

If the slope was negative, it'd have worked.

Line 2

$$3x + 6y - 18 = 0$$

$$\frac{6y}{6} = \frac{-3x + 18}{6}$$

$$y = -\frac{1}{2}x + 3$$

**13 Terrific Ts**

A school orders T-shirts from Terrific Ts. The total cost is made up of a set-up fee of \$115 and a cost of \$3 per T-shirt.

Terrific Ts requires a minimum order of 25 T-shirts. The school can spend a maximum of \$800.

Determine all the possible values of the total cost,  $C$ , and the number of T-shirts,  $n$ , for this situation.

Show your work.

let  $C$  rep cost,  $n$  represent # of T-shirts

$$C = 3n + 115$$

Find max you can purchase

$$800 = 3n + 115$$

$$685 = 3n$$

$$\boxed{n = 228}$$
  
 max

The possible values of  $n$  in this situation are min 25, max 228 and any order between 25 and 228

$$C_{\min} = 3(25) + 115$$

$$= 75 + 115$$

$$= \$190$$

$$\{25, 26, \dots, 228\}$$

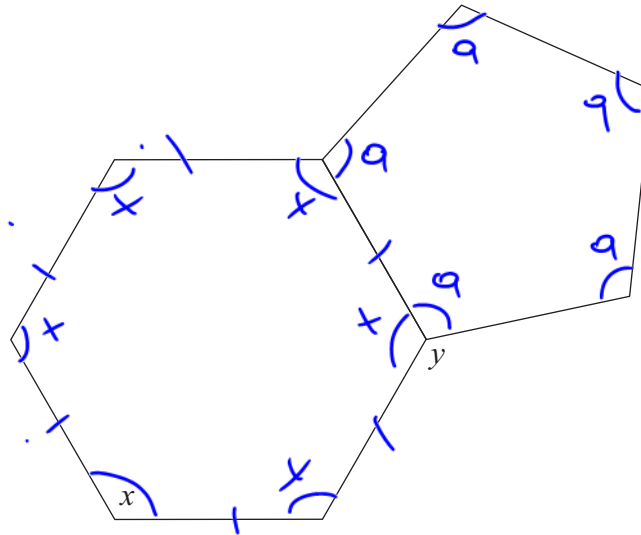
The possible values of  $C$  in this situation are min \$190 and max \$799

$$\{190, \dots, 799\}$$

**14 Six and Five Sides**

A regular hexagon and a regular pentagon are joined as shown below.

$(5-2) 180$



Complete the table below with the values of  $x$  and  $y$ . Justify your answer using geometric properties.

Value	Justification using geometric properties
$x = 120^\circ$	$(n-2)180 = \text{sum of interior angles}$ $(6-2)180 = 6x$ $(4)180 = 6x$ $\frac{720}{6} = \frac{6x}{6}$ $120 = x$
$y = 132^\circ$	$(n-2)180 = 5a$ $(5-2)180 = 5a$ $3 \cdot 180 = 5a$ $540 = 5a$ $108 = a$ $a + x + y = 360^\circ$ (circle) $y = 360 - 120 - 108$ $y = 132^\circ$





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**15** (a) (b) (c) (d)

**16** (a) (b) (c) (d)

**17** (a) (b) (c) (d)

**18** (a) (b) (c) (d)

**19** (a) (b) (c) (d)

**20** (a) (b) (c) (d)

**21** (a) (b) (c) (d)

**22** (a) (b) (c) (d)