EQAO Algebra Practice Test

Academic

Instructions:

- Place your answers to the multiple choice questions on the **Multiple Choice Answer Sheet.**
- Answer the **Open Response** question in the space provided.
- **Graphing Calculators** and **Formula Sheets** are provided.

EQAO
Education Quality and Accountability Office

Name: _____

1. Kaya works as a translator. She charges 21¢ for each word she translates.

Which expression should Kaya use to calculate her charge, in dollars, for translating a document with n words?

a $\$\frac{21 \times n}{100}$

b $\$\frac{100}{21 \times n}$

c $\$\frac{n}{21 \times 100}$

d $\$\frac{21 \times 100}{n}$

2. Tim shows the steps he took in simplifying the following algebraic expression:

$$\frac{(a^2)^3}{a^2 \times a^3}$$

$= \frac{a^5}{a^2 \times a^3}$ Step 1

$= \frac{a^5}{a^{2+3}}$ Step 2

$= \frac{a^5}{a^5}$ Step 3

$= 1$ Step 4

In which step did Tim make an **error**?

F Step 1

G Step 2

H Step 3

J Step 4

3. Bob is thinking of a number. He adds 15 to his number and finds that the result is four times his number.

Suppose x is Bob's number. Which equation is always true?

a $15 - x = \frac{x}{2}$

b $15 - x = 4x$

c $x + 15 = \frac{x}{4}$

d $x + 15 = 4x$

4. Simplify the following expression.

$(x^2 + 4x + 3) + x(3 - x)$

F $x + 3$

G $3x$

H $7x + 3$

J $-2x^2 + 4x + 3$

5. Asha receives $10 000.

Asha keeps **half** his money and gives **the rest** to Bertha.

Bertha keeps **half** her money and gives **the rest** to Calvin.

Calvin keeps **half** his money and gives **the rest** to Dane.

Dane keeps **half** his money and gives **the rest** to Evanna.

Which expression shows the dollar amount of money that **Evanna** receives from Dane?

a $10\,000 \div 2^4$

b $5000 \times \frac{1}{2} \times \frac{1}{2}$

c $10\,000 \div \frac{1}{2} \div \frac{1}{2} \div \frac{1}{2} \div \frac{1}{2}$

d $2500 \div 2$

6. Which value of x satisfies the equation $5 - 2x = 9$?

F $x = -7$

G $x = -2$

H $x = 2$

J $x = 3$

7. Juan shows the steps he took in rearranging a formula:

Given $P = 2(l + w)$

Step 1 $P = 2l + 2w$

Step 2 $P + 2l = 2w$

Step 3 $\frac{P + 2l}{2} = w$

Step 4 $\frac{P}{2} + l = w$

In which step did Juan make an error?

A Step 1

B Step 2

C Step 3

D Step 4

8. Simplify the following algebraic expression:

$$\frac{a^6b^4}{a^2b}$$

F $\frac{a^3}{b^3}$

G $\frac{a^4}{b^3}$

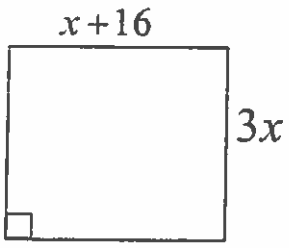
H a^3b^3

J a^4b^3

9. **Expand** and **simplify** the following expression:

$2(x^2 - 2x + 1) - x(x - 3)$

10. Determine the perimeter of the square.



11. If $x = 3$, what is the value of $2x^2 + 5x$?

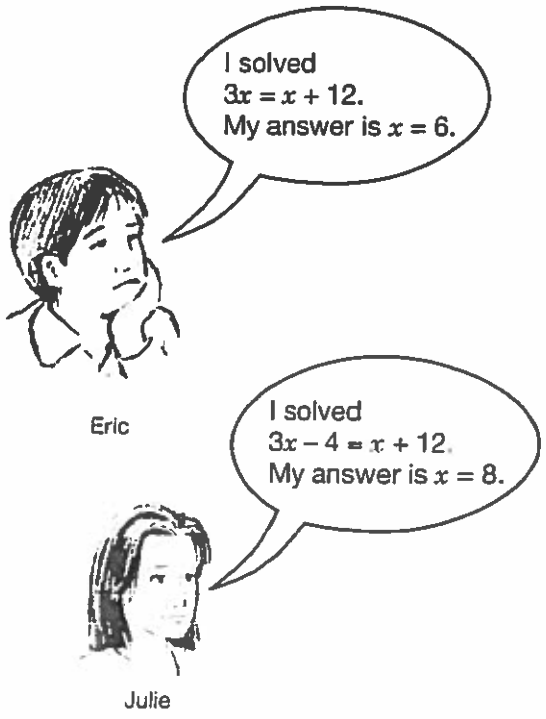
a 21

b 27

c 33

d 51

12. Eric and Julie are each asked to solve an equation.



Who has correctly solved his or her equation?

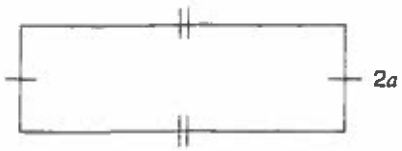
F Eric only

G Julie only

H Both Eric and Julie

J Neither of them

13. A rectangular field has a **perimeter** of $(10a - 6)$ metres and a width of $2a$ metres.



Which expression represents the **length** of this field?

A $8a - 6$

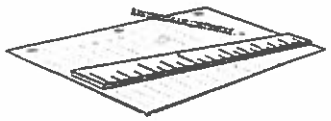
B $12a - 6$

C $3a - 3$

D $3a^2 - 3$

14. Sabeeta expands and simplifies the expression below.

$$2(3x^2 - 5x) + 4x(7 + x)$$



Which expression is equivalent to the one above?

f $6x^2 + 22x$

g $10x^2 + 18x$

h $10x^2 - 38x$

j $28x^2$

15. Simplify fully:

$$-5x(4 - 3x) + 2x^2$$

a $2x^2 - 17x$

b $2x^2 - 23x$

c $17x^2 - 5x$

d $17x^2 - 20x$

16. Simplify the following expression:

$$3x(2x + 3) - 5x$$

f $6x^2 - 5x + 3$

g $6x^2 - 6x$

h $15x^2 - 5x$

j $6x^2 + 4x$

17. An 86 metre tall radio tower is supported with the help of guy wire that is 125 metres long. Determine the distance from the base of the tower to point where the guy wire is attached to the ground.

18. A pair of jeans costs $15 more than a shirt. If the total cost for three shirts and two pairs of jeans is $255 find the cost of each.

Answer Sheet

Name: _____

1. (A) (B) (C) (D)

2. (F) (G) (H) (J)

3. (A) (B) (C) (D)

4. (F) (G) (H) (J)

5. (A) (B) (C) (D)

6. (F) (G) (H) (J)

7. (A) (B) (C) (D)

8. (F) (G) (H) (J)

9. Open Response Question

10. Open Response Question

11. (A) (B) (C) (D)

12. (F) (G) (H) (J)

13. (A) (B) (C) (D)

14. (F) (G) (H) (J)

15. (A) (B) (C) (D)

16. (F) (G) (H) (J)

17. Open Response Question

18. Open Response Question

Graphing Lines

Book #1

Academic

Grade 9 Assessment of Mathematics

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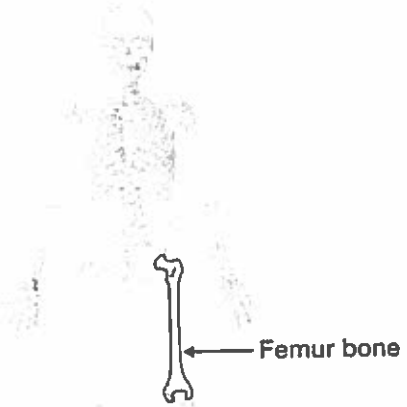
1.

Scientists find that the height of a person, h, in centimetres, is related to the length of the person's femur bone, f, in centimetres, according to the following formula:

$$h = 69.09 + 2.24f$$



According to the formula, what is **the height** of a person with a femur bone of 48.6 cm in length?

A 109 cm

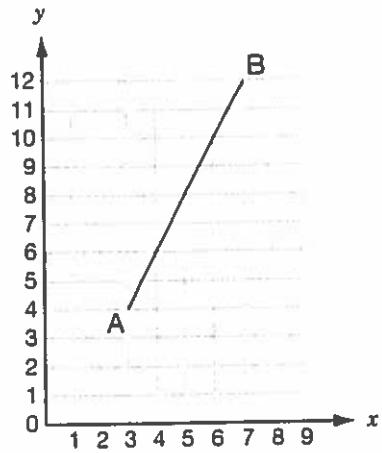
B 178 cm

C 186 cm

D 347 cm

2.

If A is (3, 4) and B is (7, 12), which point is on the line segment AB?



(3, 5)

G (4, 8)

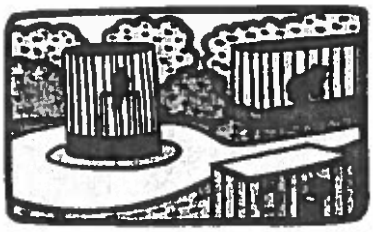
H (5, 9)

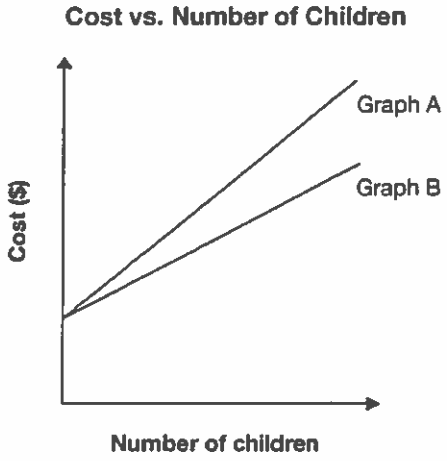
J (6, 10)

3. Amina is going to take some children to the zoo or to the museum.

The following equations represent the total cost of each trip, where C is the total cost, in dollars, and n is the number of children.

A trip to the zoo	$C = 5n + 8$
A trip to the museum	$C = 4n + 8$





Which graph represents the total cost of a trip to the **zoo?**

Circle one: Graph A or Graph B

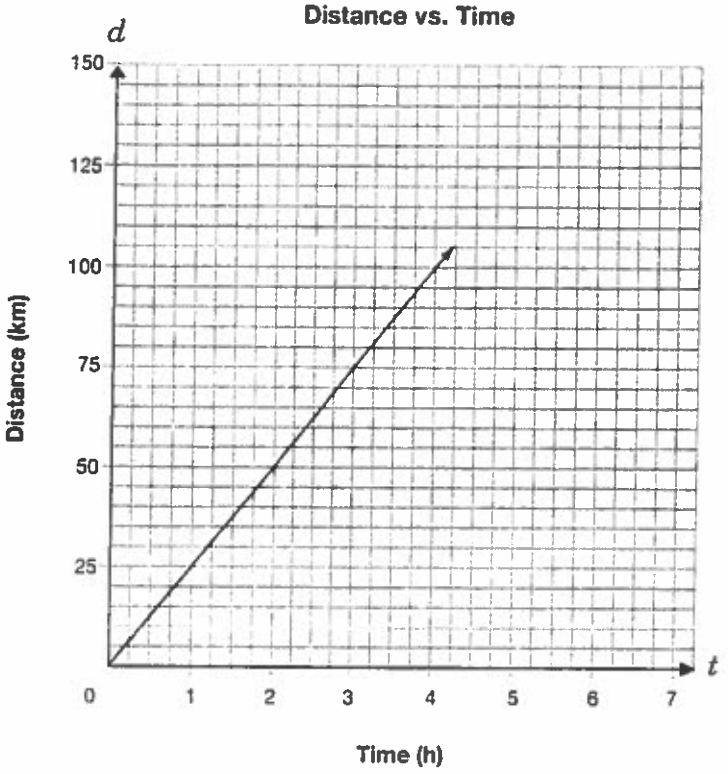
Give reasons for your choice.

4.

The relationship between the distance, d, in kilometres, travelled by a person on a bicycle and the time, t, in hours, is described in two ways:

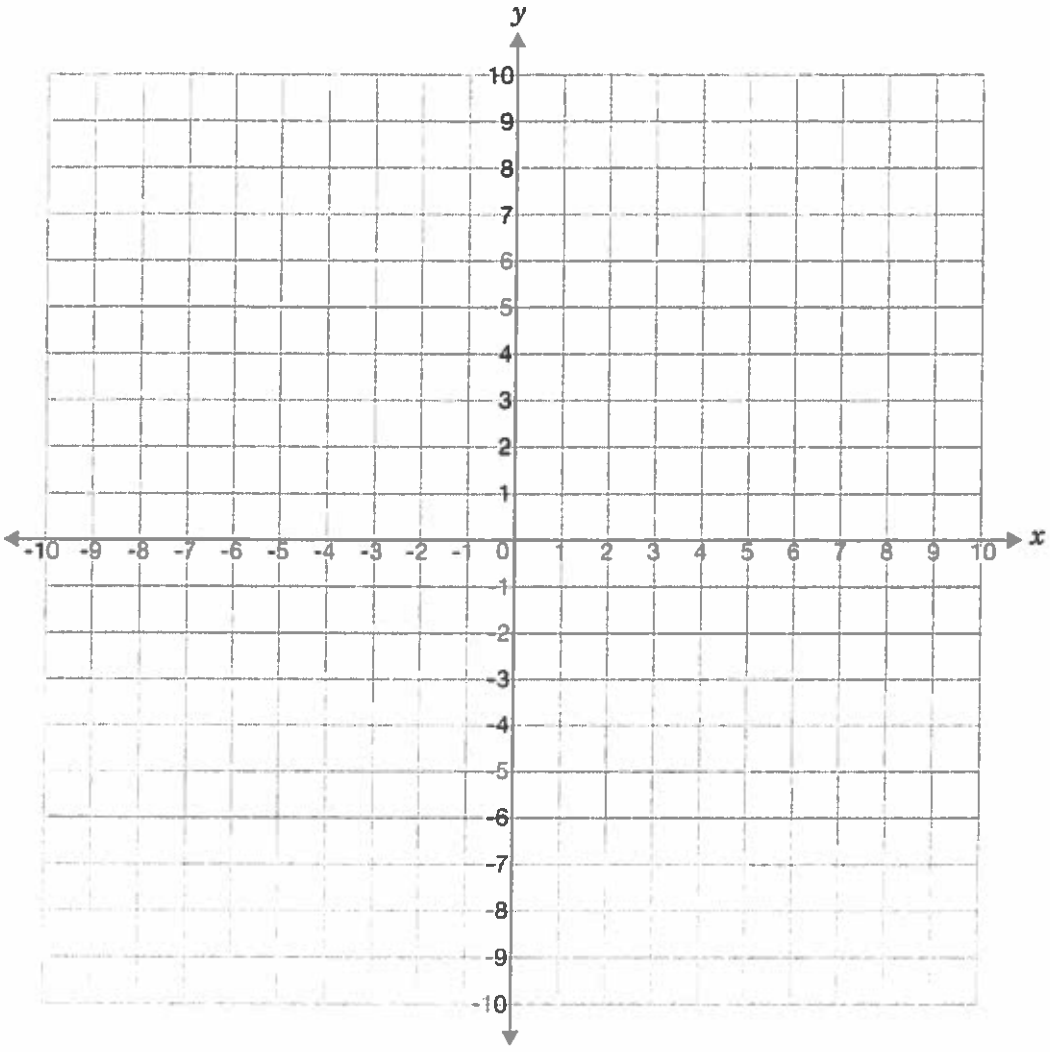
- The equation is $\boldsymbol{d = 25t}$.
- The graph is shown below.

Determine the time it will take to travel 140 km.
Show your work.



5.

Graph the line with a y-intercept of 4 and a slope of $\frac{1}{2}$.



6.

Mark records his car's odometer reading. He travels at approximately the same speed for the whole journey and makes only one 30-min rest stop.

Time	Reading (km)
12:00 noon	25 091
1:00 p.m.	25 178
2:00 p.m.	25 222
3:00 p.m.	25 310
4:00 p.m.	25 395
5:00 p.m.	25 483

When does Mark most likely make his 30-min rest stop?

A Between 1:00 p.m. and 2:00 p.m.

B Between 2:00 p.m. and 3:00 p.m.

C Between 3:00 p.m. and 4:00 p.m.

D Between 4:00 p.m. and 5:00 p.m

7.

The cost, C, in dollars to print leaflets, n, is given by the formula

$C = 35 + 0.03n$.

What is the cost of printing 900 leaflets?

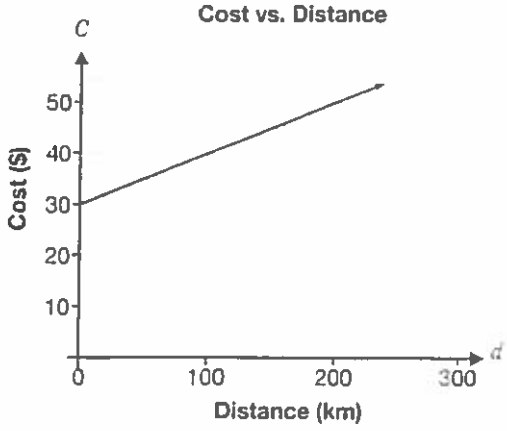
F $27.00

G $35.00

H $37.70

J $62.00

8. Which equation represents the line on the graph?



a $C = 0.1d + 30$

b $C = 0.4d + 30$

c $C = d + 30$

d $C = 10d + 30$

9.

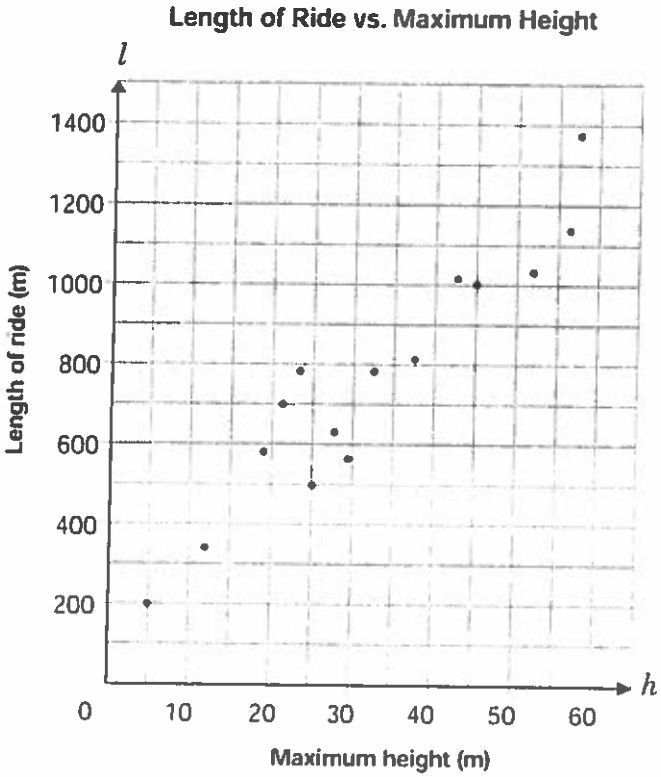
Thrill Rides

Susanna travels to different amusement parks to ride 15 roller coasters and collect data about each ride.

She constructs a scatter plot to show the relationship between the **total length** of the ride, l, in metres, and the **maximum height** of its peaks, h, in metres.

a) Draw a **line of best fit** to represent the data.

b) Determine an **equation** for your line of best fit. Justify your answer.



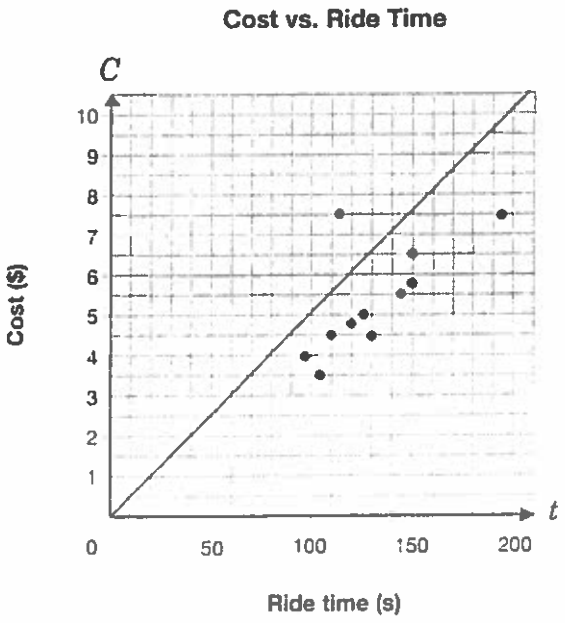
c) Susanna rides another roller coaster. The **length** of the ride on this roller coaster is **500 m.**

Determine its **maximum height,** using your results from part **a)** or **b).**
Justify your answer.

d) Susanna collects data about the relationship between the **cost of each ride,** C, in dollars, and **the time the ride lasts,** t, in seconds. She plots the data on the graph below.

Susanna graphs the equation $C = 0.05t$. She notices that its line is **not** the line of best fit.

Describe how to change the equation so that it represents the equation of a line of best fit for her data.
Justify your answer.



10.

Bowling!

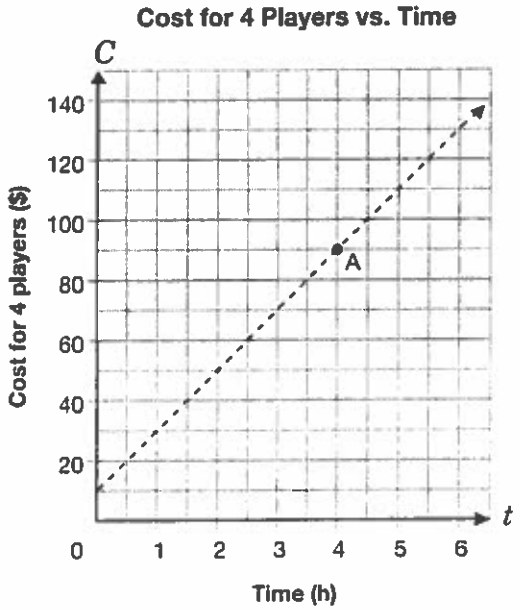
A group of 4 friends is going bowling at **Bowling Bonanza.** **Bowling Bonanza** charges

- $2.50 for each player to rent shoes
  plus
- $20/h for a group of 4 to bowl.

a) The graph below represents the relationship between cost, C, in dollars, and time, t, in hours, for 4 players to bowl.

i) **Write the coordinates** of point A.

ii) **Explain** what the coordinates of point A tell you about the cost of bowling.



b) **Explain** how this graph would change if the cost for renting the shoes increased.

> **Hint:**
> Refer to slope and y-intercept.

c) **Circle** the equation that represents the graph in question **a).**

$C = 20t + 10$ $C = 20t^2 + 10$ $C = \frac{20}{t} + 10$

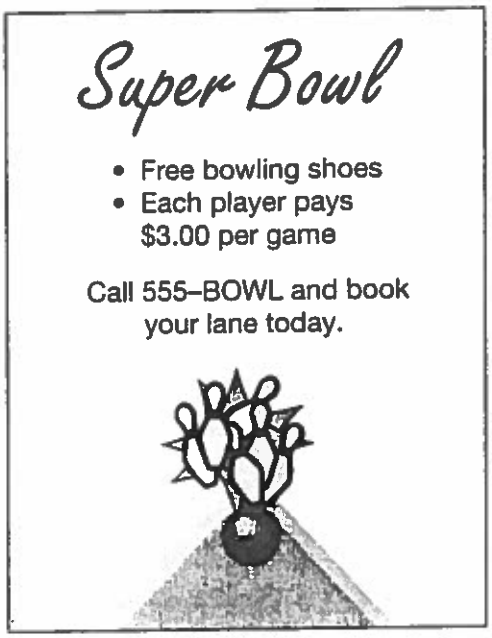
Give reasons for your answer.

d) This group of friends wants to spend $80.
How many hours can they bowl at **Bowling Bonanza?**
Give reasons for your answer or **show your work.**

e) William **and** his 3 friends are going bowling.
He finds an advertisement in the newspaper for a new bowling alley, **Super Bowl.**
William and his friends will play 6 games in 3 hours.

Determine whether William and his friends should go bowling at **Bowling Bonanza** or **Super Bowl.** Use the information given in the advertisement and in the hint box.

Give reasons for your answer.



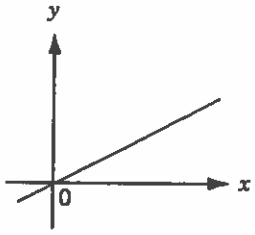
Hint:
Bowling Bonanza charges
- $2.50 for each player to rent shoes

and
- $20/h for a group of 4 to bowl.

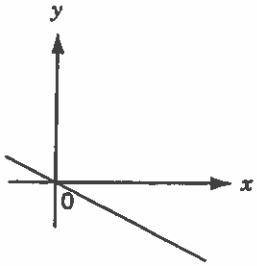
11.

Which graph below is likely the graph for $y = 2x$?

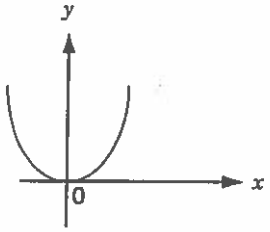
F



G



H



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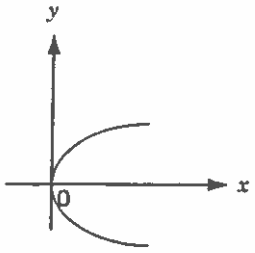
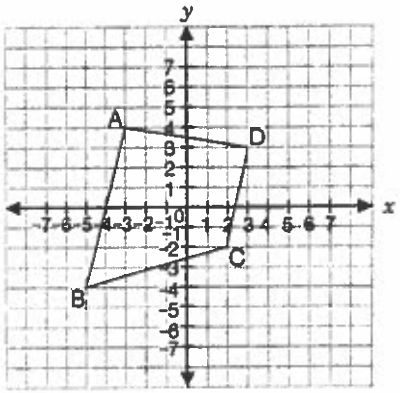


12.

Four points, A, B, C and D, are marked on an xy-plane and joined by line segments as shown.



Which line segment has a **negative** slope?

a BA

b BC

c CD

d AD