

## EQAO PRACTICE TEST #1

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The Grade 9 Practice Test #1 has one session.  
The session is split into two stages:

**Stage 1** has 14 questions, and **Stage 2** has 13 questions.

### STAGE 1

A cone and a cylinder have the same height and the same radius.

**1** If the volume of the cylinder is  $162 \text{ cm}^3$ , what is the volume of the cone?

$486 \text{ cm}^3$

$324 \text{ cm}^3$

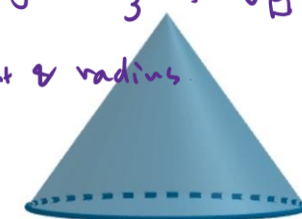
$54 \text{ cm}^3$

$81 \text{ cm}^3$

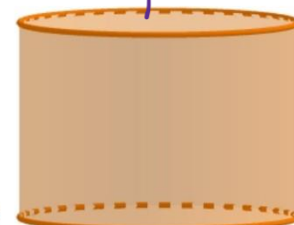
Looking at the formulas for  $V_{\Delta}$  vs.  $V_{\square}$ ,  
we see  $V_{\Delta}$  is just  $\frac{1}{3}$  of  $V_{\square}$  if they have  
the same height & radius.

$$\therefore V_{\Delta} = \frac{1}{3} V_{\square}$$

$$V_{\Delta} = \frac{162}{3}$$



$$V_{\Delta} = \frac{1}{3} \pi r^2 h$$



$$V_{\square} = \pi r^2 h$$

**2** What is the value of  $\left(-\frac{7}{4}\right)^2$ ?  $= \left(-\frac{7}{4}\right)\left(-\frac{7}{4}\right) = +\frac{7 \times 7}{4 \times 4} = \frac{49}{16}$

$-\frac{49}{4}$

$\frac{49}{4}$

$\frac{49}{16}$

$-\frac{14}{8}$

3

Draw an arrow connecting each example of financial situations involving appreciation and depreciation to the correct box.

The value of a guitar that tripled over 40 years

The value of a cell phone over time ↓

The increasing value of a piece of art over time

**Financial situation involving appreciation**

**Financial situation involving depreciation**

Information about two linear relations is shown in the tables of values on the right. Select the words that correctly complete the following statement if the relations were graphed on the same grid.

The line that represents Relation 2 starts

higher  lower

and ascends

more  less

quickly than the line for Relation 1.

slope  $\left\{ \begin{array}{l} R1: \frac{3}{5} \\ R2: \frac{8}{20} = \frac{2}{5} \end{array} \right.$

rise / run

$\frac{3}{5} > \frac{2}{5}$   
R1 > R2 again

Relation 1

Time (min)	Temperature (°C)
0	7
5	10
10	13
15	16
20	19

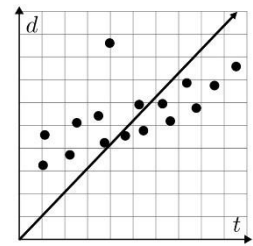
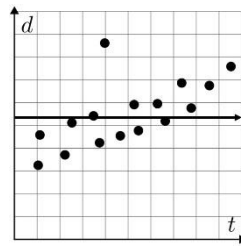
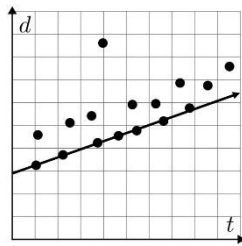
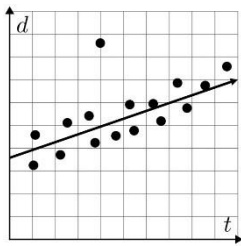
Relation 2

Time (min)	Temperature (°C)
0	6
20	14
40	22
60	30
80	38



Which graph shows the most appropriate line of best fit for the data?

5



Goal: minimize the distances from the points to the line of best fit.

A triangle is inscribed in a semicircle, as shown in the following diagram.

6

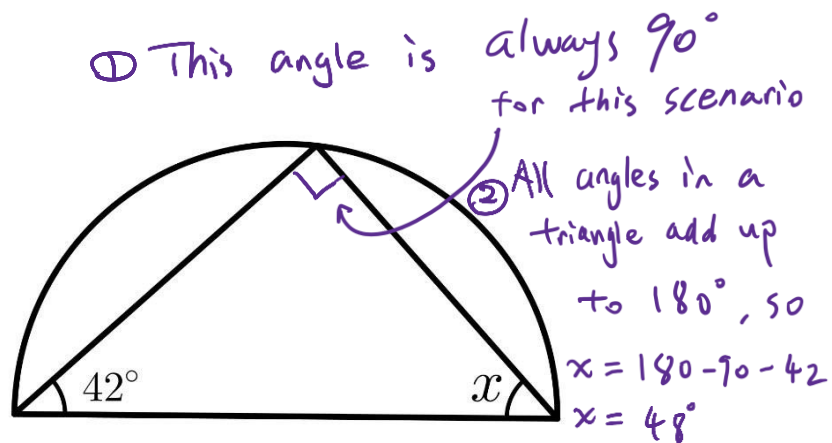
What is the measure of angle  $x$ ?

$48^\circ$

$42^\circ$

$45^\circ$

$90^\circ$



7

Ahmed is  $n$  years old.

Maria is twice as old as Ahmed.

Gia is 3 years older than Maria.

The combined age of the three children is 38.

Ahmed:  $n$

Maria:  $2n$

Gia:  $2n + 3$

$$(n) + (2n) + (2n + 3) = 38$$

Collect like terms...

Which of the following equations models the combined age of the three children?

$5n + 3 = 38$

$5n + 4 = 38$

$3n + 3 = 38$

$3n + 5 = 38$



The heights (in cm) of ten players on a basketball team are shown below.

8

206, 203, 185, 201, 213, 196, 203, 202, 198, 191

sort into ascending order: 185, 191, 196, 198, 201, 202, 203, 203, 206, 213

What is the value of the third quartile for this data set?

↳ # that separates lowest 75% from highest 25% of data.

- 196
- 201
- 204.5
- 203

Five lines of pseudocode are shown below.

9

**price** = input "Enter the price"

**tax** = 0.13 \* **price**

**tip** = 0.2 \* **price**

**total** = **price** + **tax** + **tip**

display **total**

① 86 → price  
 ②  $0.13 \times 86 = 11.18$  → tax  
 ③  $0.2 \times 86 = 17.2$  → tip  
 ④  $86 + 11.18 + 17.2 = 114.38$  → total  
 ⑤ 114.38

What output will be displayed if the user inputs a value of 86?

- 98.38
- 114.38
- 97.18
- 79.98

10. Select **ALL** of the points that satisfy the inequality  $-2x + 3y \geq 10$ .

- (3, 5)
- (-2, 2)
- (1, 6)
- (-7, -2)

$-2(3) + 3(5) = 9$	✓
$-2(1) + 3(6) = 16$	✗
$-2(-2) + 3(2) = 10$	✓
$-2(-7) + 3(-2) = 8$	✓

1  
1

What is the value of  $2.6 + 0.5\left(1\frac{3}{4}\right) - \frac{3}{2}$  ?

$= 2\frac{6}{10} + \frac{1}{2}\left(1\frac{3}{4}\right) - 1\frac{1}{2}$   
 $= \left(2\frac{6}{10} - 1\frac{1}{2}\right) + \frac{1}{2}\left(1\frac{3}{4}\right)$   
 $= 1\frac{1}{10} + \frac{1}{2}\left(1\frac{3}{4}\right)$   
 $= 1\frac{4}{40} + \frac{1}{2} \times \frac{7}{4}$   
 $= 1\frac{4}{40} + \frac{7}{8}$   
 $= 1\frac{39}{40}$

$1\frac{29}{40}$

$\frac{1}{4}$

$1\frac{39}{40}$

$\frac{3}{5}$

1  
2

What value of  $x$  makes the following equation

$-\frac{x}{12} = -\frac{5 \times 3}{4 \times 3} = -\frac{15}{12}$

8

-15

15

-8

1  
3

Simon uses his slippers, which are each 30 cm long, to measure the length of a wall in his home.

If the wall is 15 slipper lengths long, what is its length

4.0 m

4.5 m

5.2 m

3.75 m

$30 \times 15 = 450 \text{ cm}$   
 $450 \text{ cm} = 4.5 \text{ m}$

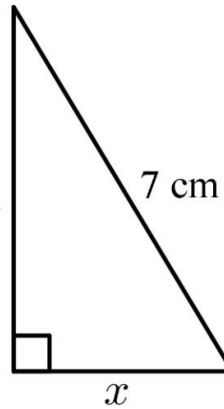


14

Which of the following is the exact value of  $x$  in the given diagram?

- 3 cm
- $\sqrt{13}$  cm
- $\sqrt{3}$  cm
- $\sqrt{113}$  cm

$$\begin{aligned} a^2 + b^2 &= c^2 \\ x^2 + 6^2 &= 7^2 \\ x^2 &= 7^2 - 6^2 \\ x^2 &= 49 - 36 \\ x^2 &= 13 \\ x &= \sqrt{13} \text{ cm} \end{aligned}$$



**STAGE 2**

15

What is the correct way to express 25 300 000 using scientific notation?

*7 trailing digits*

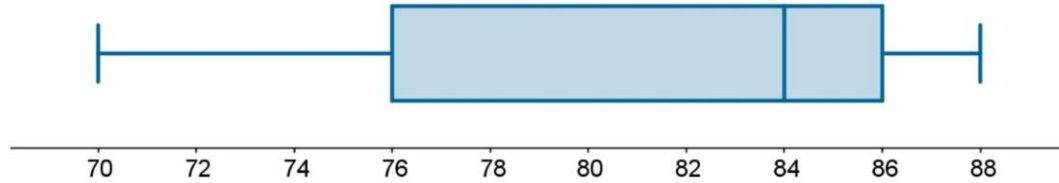
- $2.53 \times 10^{-7}$
- $2.53 \times 10^7$
- $25.3 \times 10^{-6}$
- $253 \times 10^5$



16

The box plot shown below illustrates Naomi's math test marks for the school year.

Which of the following statements **MUST** be true?



- Naomi wrote exactly five math tests during the school year — don't have that info
- Naomi received a mark of 76 on at least one math test — not enough info
- At least half of Naomi's math test marks are 84 or higher — yes, 84 is median
- Naomi's mean test mark is 84 — box plot does not show the mean

17

Draw arrows to connect two of these terms to the corresponding positions in the following equation to make the expressions equivalent:

$12x^2$     $4x^2$     $0$     $10$     $12x$     $5$

$3x(4x + 5) - (8x + 5) = \text{ } + 7x - \text{ }$

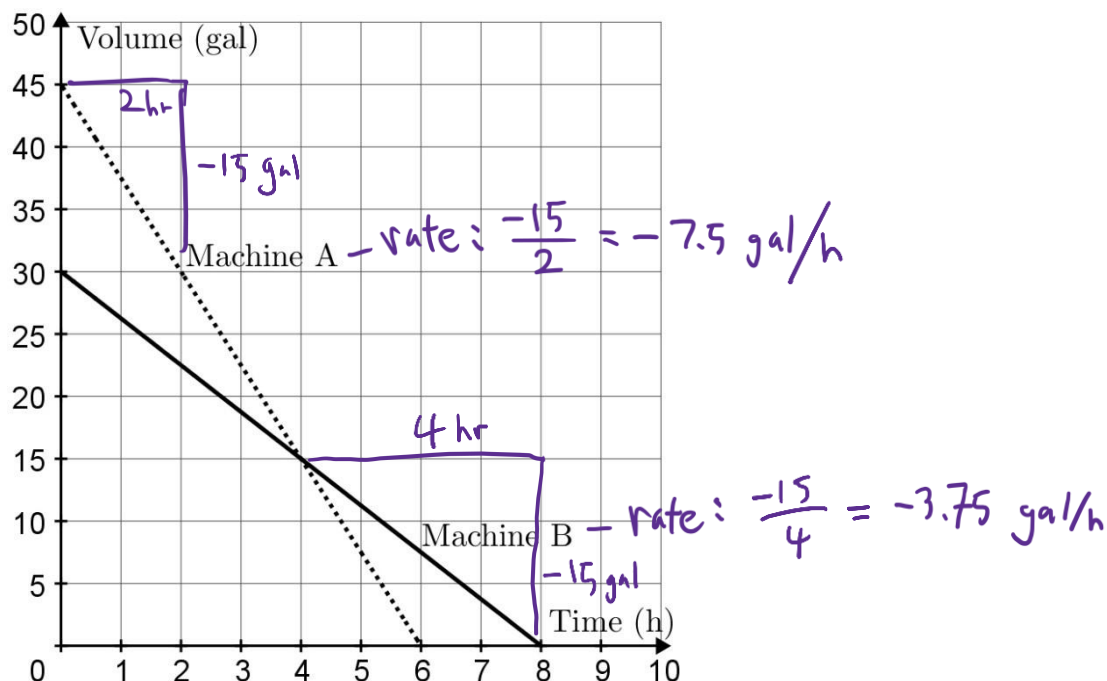
$= 12x^2 + 15x - 8x - 5$

$= 12x^2 + 7x - 5$

□

18

The graph below shows the volume of gasoline, in gallons, remaining in two machines over several hours of continuous operation.



Select the **TWO** true statements below.

- Machine A runs out of gasoline before Machine B
- Machine A and Machine B start with the same amount of gasoline *false*
- The two machines never have equal volumes of gasoline at the same time *(except at t=4)*
- Machine A consumes gasoline at a greater rate than Machine B

19

The equatorial radius of Venus is 78.5% greater than that of Mars.

$$R_V = 1.785 R_M$$

The equatorial radius of Earth is 5.3% greater than that of Venus.

$$R_E = 1.053 R_V$$

If the equatorial radius of Mars is 3389.5 km, what is Earth's equatorial radius?

$$\text{Then, } R_V = (1.785)(3389.5) = 6050 \text{ km}$$

$$R_E = (1.053)(6050) = 6371 \text{ km}$$

9257 km

5871 km

6371 km

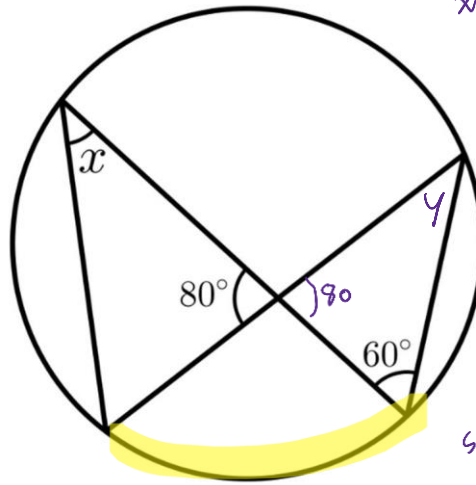
6230 km



20

What is the measure of angle  $x$  in the following diagram?

- $60^\circ$
- $40^\circ$
- $50^\circ$
- $80^\circ$



$x = y$  according to Inscribed angles rule, as they share the highlighted arc.  
 We can find  $y$  using the rule that the internal angles of any triangle sum to  $180^\circ$   
 $180 = 60 + 80 + y$   
 $y = 40^\circ$   
 since  $x = y$ ,  $x$  must be  $40^\circ$

21

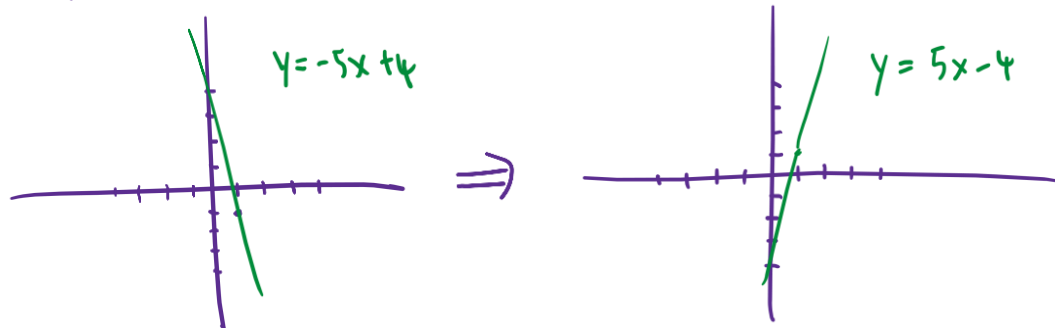
The line  $y = -5x + 4$  is reflected in the  $x$ -axis.

After the reflection, what are the coordinates of the  $y$ -intercept of the new line?

- $-4$
- $5$
- $-5$
- $4$

In order to reflect in the  $x$ -axis, we simply substitute  $-y$  for  $y$ , because all  $y$ -values for every point on the line is now reflected and becomes negative.  
 $-y = -5x + 4$ , then rearrange  
 $y = 5x - 4$   
 new  $y$ -intercept

Graphical solution



22

The following sequence begins with the numbers 0 and 1, and each following term is found by adding the previous two terms:

0, 1, 1, 2, 3, 5, 8, ... (Fibonacci)

Pseudocode is written to display the first 30 terms of this sequence.

Draw an arrow to indicate where each line of code should be placed to correctly complete the pseudocode.

set **ValueOne** = -1

set **ValueTwo** = 1 goes here as it is initializing the variable to a starting value

loop 30 times

Now we must calculate "Next" because we need to display it in the next line.

display **Next**

set **ValueOne** = **ValueTwo**

"ValueOne" and "ValueTwo" keep track of the previous values of the Fibonacci sequence. They need to be updated..

calculate **Next** = **ValueOne** + **ValueTwo**

set **ValueTwo** = **Next**

① set **ValueTwo** = 1

23

Select **ALL** of the following sets of numbers that include 0.

- natural numbers
- irrational numbers
- integers
- real numbers

24

In the following figure, all angles formed by adjacent sides are right angles  
Which algebraic expression represents the area of the figure?

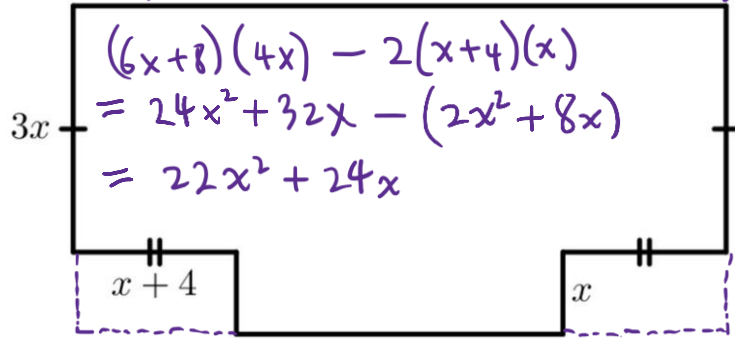
$20x + 16$

$23x^2 + 28x$

$22x^2 + 24x$

$18x^2 + 24x$

One strategy is to calculate the area of the large rectangle and then subtract the  $6x + 8$  area of the small rectangles.



25

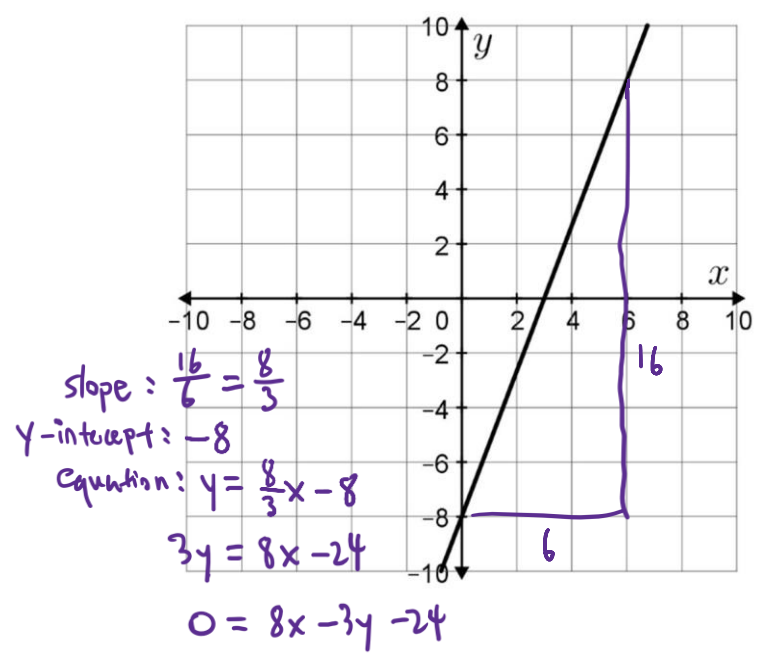
What is the equation of the line shown in the graph?

$8x - 3y = 24$

$3x + 8y = -24$

$y = 3x - 8$

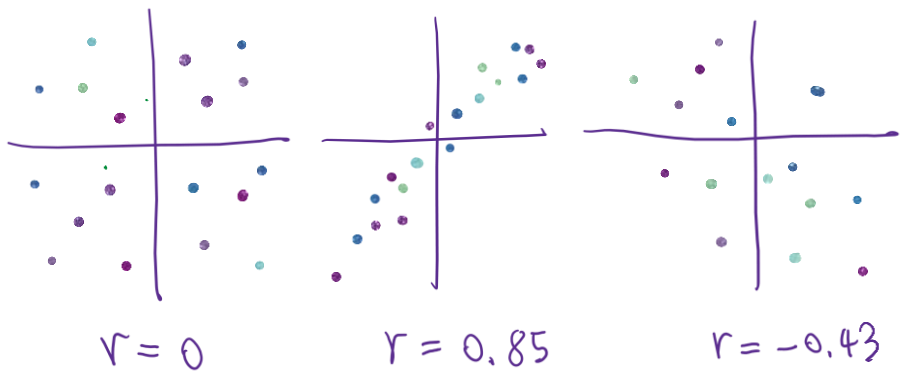
$3x - 8y = 24$



26

Which of the following correlation coefficients would indicate the weakest linear relationship between the two variables of a data set?

- $r = 0.02$
- $r = 0.85$
- $r = -0.43$
- $r = -0.96$



\* also, do not confuse  $r$  with slope (these graphs are normalized)

27

Rami plans to invest \$1000 for 3 years using one of the following interest calculation options:

- Option 1:** Simple interest at a rate of 2.8% per year  
 $A = P(1 + rt)$   
 $A = 1000 [1 + (0.028)(3)]$   
 $A = 1084.00$
- Option 2:** Compound interest at a rate of 2.8% per year, compounded monthly  
 Monthly Compounding:  $A = P(1 + \frac{r}{n})^{nt}$
- Option 3:** Compound interest at a rate of 2.8% per year, compounded annually  
 $A = 1000(1 + \frac{0.028}{12})^{12 \cdot 3}$   
 $A = 1087.52$

Select the **TWO** true statements below.

- Option 1 earns the greatest amount of interest X
- Option 3 is an example of linear growth X
- Option 2 earns more interest than option 3 ✓
- Option 3 earns more interest than option 1 ✓

Annual Compounding:  $A = P(1 + r)^t$   
 $A = 1000(1 + 0.028)^3$   
 $A = 1086.37$