Mathematics / Mathématiques

Test Description

The Grade 9 Mathematics Achievement Test consists of two parts:

- Part A contains 20 numerical-response questions and was designed to be completed in 20 minutes. Part A will assess students' foundational skills and fluency in mental math, estimation, computation, and algebra, without the use of calculators.
- Part B contains 32 multiple-choice questions and 8 numerical-response questions. Part B was designed to be completed in 70 minutes. Students may use manipulatives and calculators to complete Part B.

The test was designed to be completed in 90 minutes; however, students may have up to 180 minutes to complete this test plus an additional 30 minutes if needed. Teachers have the flexibility to allocate the extra 120 minutes between Part A and Part B as they see fit.

Test items are created from the specific outcomes contained within each of the following four strands of the *Grade 9 Mathematics Program of Studies*: Number, Patterns and Relations, Shape and Space, and Statistics and Probability. Students record their answers on tear-out, machine-scorable answer sheets. See *Appendix* for information on new French spelling.

For more information, view the *Grade 9 Mathematics Subject Bulletin*.

Sample Questions for Part A

1. Simplify the expression $\frac{8^5 \times 3^4}{8^2 \times 3}$ and represent it in the form $a^b c^d$.

Answer: ____, ____, ____, ____.
a *b* *c* *d*

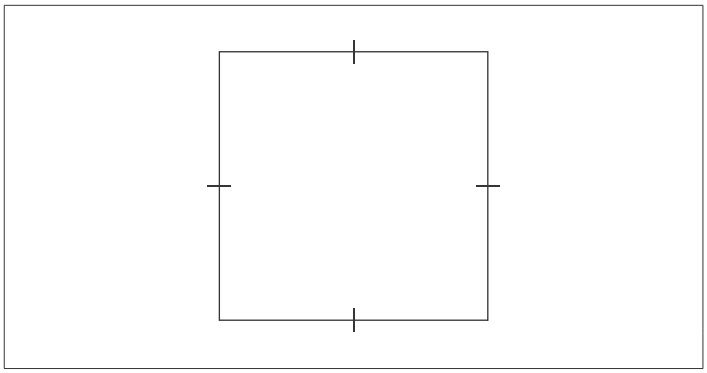
(Record your answer, **in order**, on the answer sheet.)

2. What is $4^3 - 3^4$?

Answer: _____

(Record your answer on the answer sheet.)

Use the following information to answer question 3.



3. If the area of the square shown above is 135 cm^2, what is the approximate side length to the nearest centimetre?

Answer: _____

(Record your answer on the answer sheet.)

4. Order the following rational numbers from **smallest** value to **greatest** value, using the numbers **1**, **2**, **3**, and **4**.

Use the number **1** to represent the **smallest** value and the number **4** to represent the **greatest** value.

Answer: _____, _____, _____, _____

$\sqrt{\frac{4}{9}}$ $-1.\overline{5}$ -1.75 $-\frac{8}{5}$

(Record all **four digits** of your answer on the answer sheet.)

5. Evaluate $\frac{-2^4 + (-3)^2 - 7^0}{-2^3 + (-2)^2}$.

Answer: _____

(Record your answer on the answer sheet.)

Use the following information to answer question 6.

$\sqrt{51}$ $\sqrt{55}$ $\sqrt{61}$ $\sqrt{66}$
$\sqrt{71}$ $\sqrt{77}$ $\sqrt{82}$ $\sqrt{88}$

6. How many of the square roots shown above have a value that is between 8 and 9?

Answer: _____

(Record your answer on the answer sheet.)

7. The value of x in the equation $\frac{x}{5} + 1 = 26$ is _____.

Answer: _____

(Record your answer on the answer sheet.)

8. Given the expression $2(3)^4$, what does each digit represent in the expression?

Answer: _____, _____, _____
Exponent **Coefficient** **Base**

(Record all **three digits** of your answer on the answer sheet.)

Use the following information to answer question 9.

$\frac{2}{3}$ $\frac{7}{9}$ $10\frac{5}{6}$ $35\frac{1}{2}$

9. What is the lowest common denominator for the fractions and mixed numbers shown above?

Answer: _____

(Record your answer on the answer sheet.)

10. What is $\frac{1}{2} \times 5 \times \frac{4}{5}$?

Answer: _____

(Record your answer on the answer sheet.)

11. What is 70% of 95?

Answer: _____

(Record your answer on the answer sheet.)

12. What is $\frac{5}{6} + \frac{3}{4} + \frac{5}{12}$?

Answer: _____

(Record your answer on the answer sheet.)

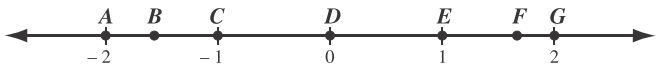
13. What is $3 + 0.43 - \frac{16}{25}$?

Answer: _____

(Record your answer on the answer sheet.)

Use the following information to answer question 14.

Consider the inequality $3x - 4 \leq 2x - 5$.



14. How many of the points labelled with a letter on the number line above satisfy the inequality?

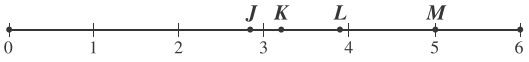
Answer: _____ **points**

(Record your answer on the answer sheet.)

Sample Questions for Part B

Use the following information to answer question 1.

The letters on the number line below represent rational numbers.



1. The approximate value of $\sqrt{15}$ is represented by the letter

A. J

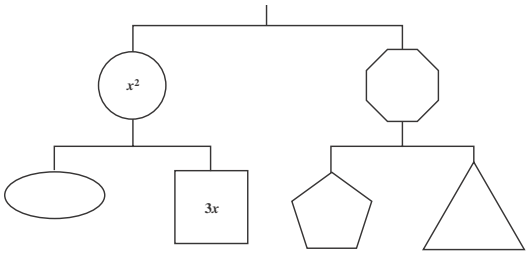
B. K

C. L

D. M

Use the following information to answer question 2.

The following diagram represents a balanced mobile.



2. The sum of all parts of the mobile is

A. $2x^2 + 12x$

B. $2x^2 + 9x$

C. $x^2 + 6x$

D. $x^2 + 3x$

Use the following information to answer question 3.

Sandy has a budget of $100 to spend on back-to-school clothes. The shirts she wants to buy are $12 each, and the pants she wants to buy are $25 each. All prices include tax.

3. Which of the following inequalities could be used to determine the maximum number of shirts, n, Sandy can buy if she also buys 2 pairs of pants?

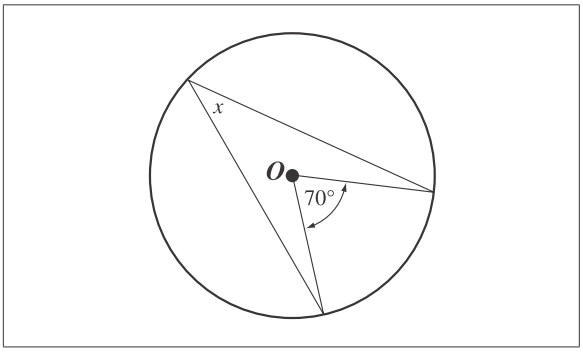
A. $12n - 2(25) \leq 100$

B. $12n + 2(25) \leq 100$

C. $2(25) - 12n \geq 100$

D. $2(25) + 12n \geq 100$

Use the following information to answer numerical-response question 1.



Numerical Response

1. If O is the centre of the circle, the measure of x is _____ °.

(Record your answer in the numerical-response section on the answer sheet.)

Use the following information to answer question 4.

A truck heads north at a constant speed of 80 km/h. A car leaves 20 minutes later heading north along the same road and travelling at a constant speed of 90 km/h.

4. Which of the following equations could be used to determine how much time in hours, t, the car travels until it catches up to the truck?

A. $90t = 80\left(t - \frac{1}{3}\right)$

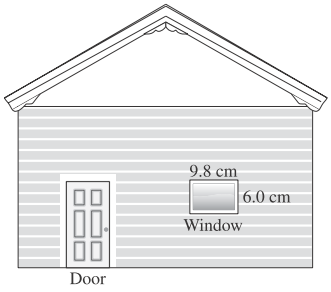
B. $90t = 80\left(t + \frac{1}{3}\right)$

C. $90t = 80(t - 20)$

D. $90t = 80(t + 20)$

Use the following information to answer question 5.

The diagram below shows the front elevation of a building on a blueprint.



Blueprint scale
1:18

5. Based on the dimensions shown on the blueprint, the actual dimensions of the window, to the nearest tenth of a metre, will be

A. 0.5 m × 0.3 m

B. 1.0 m × 0.6 m

C. 1.8 m × 1.1 m

D. 1.8 m × 3.0 m

Use the following information to answer numerical-response question 2.

Sam draws two polygons that are similar. The first polygon has a perimeter of 16 cm and the second polygon has a perimeter of 10 cm.

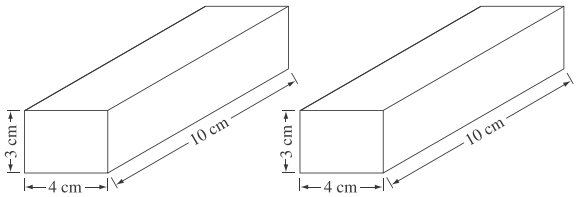
Numerical Response

2. If the shortest side of the first polygon has a length of 4 cm, then the corresponding side of the second polygon has a length of _____ cm.

(Record your answer in the numerical-response section on the answer sheet.)

Use the following information to answer numerical-response question 3.

Darren joins the rectangular prisms shown below to create a new rectangular prism that has the greatest possible surface area. He then paints all visible surfaces. After the paint dries, Darren separates the two prisms.



Numerical Response

3. The total area of both prisms that has **not** been painted is _____ cm^2.

(Record your answer in the numerical-response section on the answer sheet.)

Answers to Sample Questions

English Language Arts

1 A
2 A
3 D
4 C
5 B

French Language Arts

1 A
2 A
3 C
4 A
5 D
6 A

Mathematics/ Mathématiques

Part A
Numerical Response

1 8333 / 3383
2 –17
3 12
4 4312
5 2
6 3
7 125
8 423
9 18
10 2
11 66.5
12 2
13 2.79
14 3

Part B
Multiple Choice

1 C
2 A
3 B
4 B
5 C

Numerical Response

1 35
2 2.5
3 24

Science/Sciences

Multiple Choice

1 B
2 C
3 A
4 C

Numerical Response

1 2413

Social Studies/ Études Sociales

1 D
2 C
3 D
4 A

Contacts

If you have additional questions or comments about achievement testing, please speak with your child's teacher or school principal, or contact:

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To be connected toll-free in Alberta, dial 310-0000.