Hojas para la Escuela Secundaria

Exámen de Matemáticas

Opción Múltiple

El exámen de las matemáticas del PSSA se aplica en los grados 3-8, y 11.

- Mira los términos de matemáticas incluidos aquí – tienes que conocerlos para el PSSA
- Mira las fórmulas incluidas aquí – te las dan durante el examen, pero tienes que saber usarlas
- Mira los ejemplos y practica – tu maestro tiene las respuestas correctas
- Lee la pregunta varias veces y subraya o marca la información importante
- Trata de solucionar el problema antes de mirar las opciones de respuestas para que no te engañe ninguna opción falsa
- Usa el libro de preguntas y papeles blancos para hacer el trabajo de las matemáticas
    - trabaja despacio y con cuidado para no cometer errores
    - no trates de hacer mucho trabajo "en tu mente"
    - escribe con cuidado y en columnas
    - copia con cuidado de la pregunta
    - mira con cuidado las unidades de medida
    - dibuja el problema si eso te ayudará
    - si no encuentres la respuesta, no te rindas – trata otra vez, y inténtalo de otra manera diferente
    - si no hay otro modo, trata de usar las respuestas dadas para ver cuál funciona para contestar la pregunta
- Puedes usar una calculadora en algunas de las preguntas, pero no todas
- Cuando se permite el uso de la calculadora, **úsala**, al menos para revisar tus respuestas
- Lee las opciones de respuestas con cuidado
- Cuidado con opciones engañosas – lee la pregunta con cuidado y escoge la correcta operación matemática
- Cuando termines con esta parte, regresa para revisar tu trabajo

Exámen de Matemáticas

Parte Escrita

- Mira los ejemplos incluidos aquí y practica usando el "rubric" o instrucciones
- Mira el ejemplo "Sample Response for Category 5" incluido aquí como modelo de una respuesta excelente
- Esto no es opción múltiple – tu tienes que dar la respuesta
- Hay pocas preguntas de este tipo, pero son gran parte de tu calificación total, así que no pases estas preguntas
- Haz todo lo que puedas, porque puedes recibir puntos parciales aunque tengas errores
- Lee la pregunta con cuidado, marca la información importante, y toma tu tiempo
- Pon atención a ver cuántas respuestas se piden, y antes de empezar, divide el espacio del papel para tener el espacio suficiente para todas las respuestas
- Escribe claramente
- Hay que mostrar todo el trabajo, aún cuando uses una calculadora
- Si usas una calculadora, explica qué hiciste con la calculadora (por ejemplo, "I entered 3 multiplied by 3 and I got the product 9.")
- Explica cada paso de las matemáticas, y por qué decidiste hacerlo así – asegúrate de que tu explicación sería fácil para otra persona leer
- Trata de usar palabras como estas cuando escribes tu explicación:
    - to get
    - to find
    - to figure out
    - to show
    - because
    - since
    - therefore

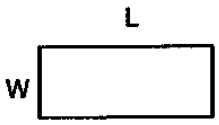
- Es buena idea usar dos columnas para mostrar tu respuesta, así:

WORK	EXPLICACIÓN
escribes y muestras los cálculos, los números, y las respuestas aquí	usas palabras para describir todo el trabajo que hiciste y tus razones por hacer ese trabajo aquí

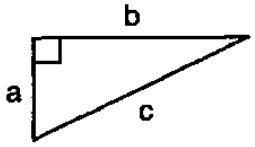
Terms used in the Academic Standards for Mathematics through Grade 8

1. Angle Measurement in Degrees
2. Bisector
3. Box-and-Whisker Plot
4. Combination
5. Complementary Angle
6. Coordinate Plane
7. Counter Example
8. Deductive Reasoning
9. Dimensions
10. Equation
11. Evaluate the Expression
12. Exponent
13. Exponential Relationship
14. Functional Relationship
15. Inductive Reasoning
16. Inequality
17. Irrational Number
18. Linear Function
19. Linear Relationship
20. Logical Reasoning
21. Number Line
22. Order of Operations
23. Percent
24. Permutation
25. Proportion
26. Pythagorean Theorem
27. Quadratic Relationship
28. Quartile
29. Random Sampling
30. Ratio
31. Rational Number
32. Regular Polygon
33. Reliability
34. Scale Model
35. Scientific Notation
36. Sequence
37. Slope
38. Square Root
39. Stem-and-Leaf Plot
40. Supplementary Angle
41. Transformation
42. Transversal
43. Unit Rate
44. Verbal, Symbolic Rules
45. Vertical Angle

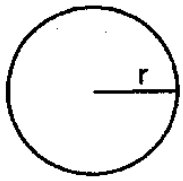
GRADE 8 FORMULA SHEET



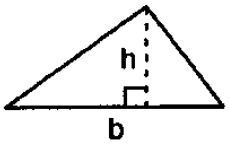
$A = LW$
$P = 2L + 2W$



$a^2 + b^2 = c^2$



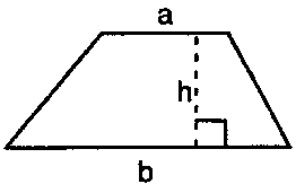
$C = 2\pi r$
$A = \pi r^2$



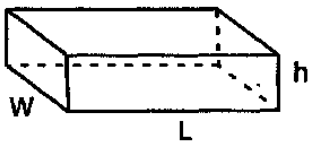
$A = \frac{1}{2}bh$

Constant Motion $d = rt$

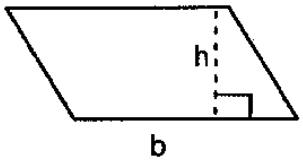
Simple Interest $I = prt$



$A = \frac{h}{2}(a + b)$



$V = LWh$
$A = 2LW + 2Lh + 2Wh$



$A = bh$

You may <u>not</u> use a calculator for items 1–5.

1. Multiply.

$$\begin{array}{r} 762 \\ \times\ 968 \\ \hline \end{array}$$

A. 737,616
B. 737,516
C. 737,216
D. 737,606

2. Subtract.

$$\begin{array}{r} 14\frac{5}{8} \\ -\ 6\frac{5}{8} \\ \hline \end{array}$$

A. $8\frac{5}{24}$
B. $21\frac{11}{24}$
C. 8
D. $7\frac{19}{24}$

3. Divide.

$3 \div 0.24 =$

A. .08
B. .72
C. 12.5
D. 125.00

4. Subtract.

$$\begin{array}{r} 11 \\ -\ 1\frac{2}{3} \\ \hline \end{array}$$

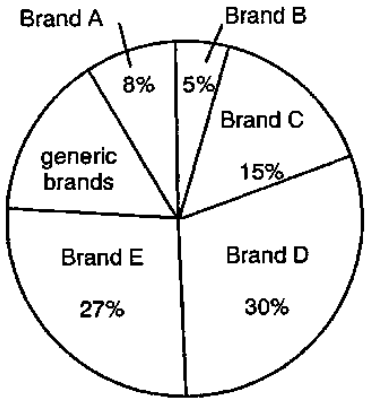
A. $9\frac{1}{3}$
B. $9\frac{2}{3}$
C. $10\frac{1}{3}$
D. $10\frac{2}{3}$

5. A secretary can type 56 words per minute. How much time will she need to type a 4200 word report?

A. 7 hours 30 minutes
B. 1 hour 4 minutes
C. 1 hour 28 minutes
D. 1 hour 15 minutes

You may use a calculator for the rest of the questions on this test.

6. According to the graph, what percent of the students chose generic brands?



Favorite Sneakers at Sherman High School

A. 15%
B. 14%
C. 17%
D. 16%

7. Chris had the following equation for math homework: $6x - 7 = 47$. Which of the following steps would be correct in solving the equation?

A. $13x = 47$
B. $6x - 7 + 7 = 47 + 7$
C. $6x - 7 + 7 = 47 - 7$
D. $-x - 7 + 7 = 47 - 7$

8. Juanita works in a large department store and earns $3.60 per hour. The store will pay her an extra 5% in salary for each hour that she sells more than $100 worth of merchandise. She makes this sales quota for each hour of her 5-hour shift. How much will she earn for the shift?

A. $18.00
B. $18.90
C. $20.90
D. $23.00

9. The table below shows test scores for a class. How many students scored in the 80's?

Stem	Leaf
9	0 1 1 5 7
8	0 0 2 4 6 7 9
7	7 7 8 9
6	9
5	2 3
4	4

A. 2 students
B. 6 students
C. 7 students
D. 9 students

10. There are 9 packages, 5 red and 4 green. There are calculators inside 4 of the red packages and inside 2 of the green packages. What is the probability of choosing a package containing a calculator from the entire group of packages?

A. $\frac{4}{5}$

B. $\frac{2}{3}$

C. $\frac{1}{2}$

D. $\frac{4}{9}$

11. Which of the following sets **cannot** be the measures of the angles of a triangle?

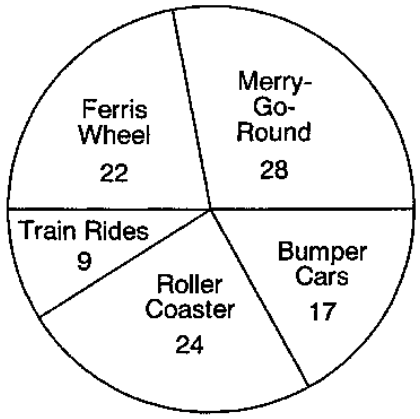
A. 25°; 75°; 90°

B. 31°; 61°; 88°

C. 50°; 60°; 70°

D. 51°; 49°; 80°

12. The following graph shows the favorite rides of 5th-grade students and the number of students choosing each ride. The Merry-Go-Round was **about** _____ times as popular as the Train Rides.



A. 3

B. 4

C. 9

D. 19

13. Which of the following **best** describes the pattern 4, 8, 12, ...?

A. $1 + n,\ 4 + n,\ 8 + n,\ \ldots$

B. $n^2,\ n^3,\ n^4,\ \ldots$

C. $n,\ 2n,\ 3n,\ \ldots$

D. $n,\ \frac{n}{2},\ \frac{n}{3},\ \ldots$

14. How many yards are equal to 72 inches?

A. 2 yards
B. 3 yards
C. 6 yards
D. 36 yards

15. Evaluate $5x + 4y$ when $x = 3$ and $y = -2$.

A. -7
B. 7
C. 10
D. 23

16. A certain clock chimes every 15 minutes. Another clock chimes every 18 minutes. If they both chime together at 12 o'clock, in how many minutes will they chime together again?

A. 33 minutes
B. 150 minutes
C. 90 minutes
D. 270 minutes

17. Which is the **best** way to find a representative sample of all the students in a school?

A. Ask any 25 of the most popular student's friends.
B. Ask the first 25 people from a certain room.
C. Ask for 25 volunteers.
D. Select 25 people at random from homeroom class lists.

18. Find the area of a rectangle having sides of 10 feet and 5 feet.

A. 15 square feet
B. 25 square feet
C. 30 square feet
D. 50 square feet

19. Using the chart below, determine the number of diagonals from a single vertex in a 10-sided figure.

	Triangle	Quadrilateral	Pentagon	Hexagon
Sum of interior angles	180°	360°	540°	720°
No. of diagonals from one vertex	0	1	2	3
No. of sides	3	4	5	6

A. 6
B. 7
C. 8
D. 9

20. Jan entered a drawing for a dirt bike 5 times. Only 150 entries were received. What is the probability that Jan will win the dirt bike?

A. $\frac{1}{150}$

B. $\frac{1}{50}$

C. $\frac{1}{30}$

D. $\frac{1}{5}$

21. If A is equal to 1, then $A^4 \times A^4$ is equal to

A. 16

B. 8

C. 4

D. 1

22. At 11:00 a.m. a one-meter-high mailbox casts a 0.2-meter shadow. If a pole beside the mailbox casts a 4-meter shadow, how tall is that pole?

A. 2 meters

B. 20 meters

C. 0.2 meters

D. 0.02 meters

23. Keisha needs $48,000 to meet her living expenses. She receives a yearly salary of $25,000 for selling computers. She earns $250 extra for each computer that she sells. How many computers will she need to sell to meet her living expenses?

A. 62

B. 63

C. 92

D. 100

24. There was a power failure last weekend. The power went off on Friday at 7:00 p.m. and came back on at 2:00 p.m. Sunday. For how many hours was the power off?

A. 43 hours

B. 19 hours

C. 26 hours

D. 38 hours

25. Which one of the equations shows 630 written as a product of **prime** factors?

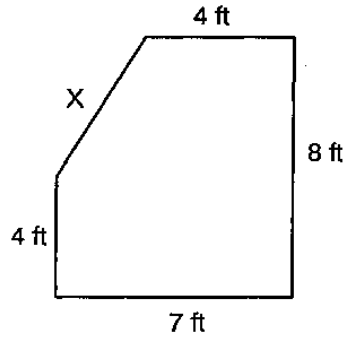
A. $2 \times 7 \times 45$

B. $2 \times 3 \times 3 \times 5 \times 7$

C. $3 \times 3 \times 5 \times 7$

D. $1 \times 2 \times 315$

26. This is a diagram of a wall. Find the length of side X.



Note: Figure is **NOT** drawn to scale.

A. 5 feet

B. 8 feet

C. 15 feet

D. 896 feet

27. Choose another correct way to write:

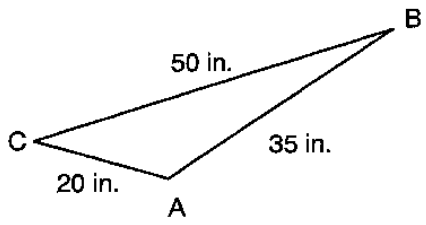
$$P = 2L + 2W$$

A. $P = 2(L + W)$
B. $P = 2(L + 4W)$
C. $P = 2(2L + 2W)$
D. $P = L(2 + W)$

28. If the perimeter of a square is 4 cm, what will the perimeter be if the length of each side is doubled?

A. 64 cm
B. 16 cm
C. 8 cm
D. 6 cm

29. In triangle ABC, AB = 35 inches, AC = 20 inches, and CB = 50 inches. If angle CAB was made **larger** and AB and AC stayed the same length, what would happen to CB?



Note: Figure is **NOT** drawn to scale.

A. CB gets larger.
B. CB stays the same.
C. CB gets smaller.
D. none of the above

30. What is the next number in the number sentence?
4, 13, 28, 49, ... ?

A. 58
B. 64
C. 76
D. 98

31. If $4x - 6 = 14$, what is the value of x?

A. 1
B. 2
C. 4
D. 5

Figure 3
Mathematics General Problem Solving Rubric

5 - Advanced Understanding, Excellent

- Correct answer with correct procedures/correct calculations shown or described and a written explanation that supports the work shown. The explanation tells what was done in the solution process and explains **why** the steps were done (or the reason(s) for the steps to be taken). No blemishes, that is, everything is correct. May have a minor omission in calculation or explanation where the omitted step or explanation may be of the level of 2 + 2 = 4 (something that is usually done mentally and considered trivial and understood).

4 - Satisfactory Understanding

- Correct answer with correct procedures/correct calculations shown or described and a written explanation which supports some of the work shown. May have minor omission in calculation or explanation (such as 2 + 2 = 4).

3 - Almost Satisfactory Understanding

- Correct answer with most correct procedures/calculations shown or described and no explanation. Some steps are missing, but you can follow what is being done.
- Correct answer with few correct procedures/calculations shown or described and some explanation. Some steps are missing, but you can follow what is being done.
- Incorrect answer with correct procedures shown or described and some explanation, but with one calculation or copying error carried through.

2 - Partial Understanding

- Correct answer with few procedures/calculations shown or described or some explanation. Too many steps are missing to follow what is being done.
- Incorrect answer with half or more correct procedures shown or described and some or no explanation. The student either did not proceed far enough or proceeded incorrectly.
- Incorrect answer with correct procedures shown or described and no explanation. May have no more than 2 calculation or copying errors.

1 - Minimal Understanding

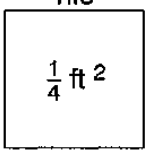
- Correct answer with calculations, procedures or explanation that are either not legible or not understandable or missing or the procedure is incorrect. Less than a "2" score.
- No answer or an incorrect answer, but the student has provided some of the information critical to the solution. There is some indication that the student has read the item.

0 - Incorrect

- Incorrect answer in which the student attempts the task incorrectly or gives an incorrect or incomplete answer with an incorrect explanation or no explanation of the procedure or logic used in the solution. Nothing is correct.
- Blank responses and Off-Task responses (profanity, refusal to perform, unrelated drawings or comments such as "doodles") are scored as "Incorrect responses."
- Question marks and "I don't know" are scored as "Incorrect responses." The student has read the task and responded to it.
- No answer is treated as an incorrect answer.

32. A contractor has been hired to tile a rectangular region which has an area of 64 sq ft. He will use square tiles that measure $\frac{1}{4}$ sq ft.

Tile



For full credit, you **must** do the following:

1. show OR describe each step of your work, even if you did it in your head ("mental math") or used a calculator,

AND

2. write an explanation stating the mathematical reason(s) **why** you chose each of your steps.

A. Using whole numbers, list all possible sets of dimensions (height and width) for the region.

GO TO THE NEXT PAGE TO FINISH QUESTION 32.

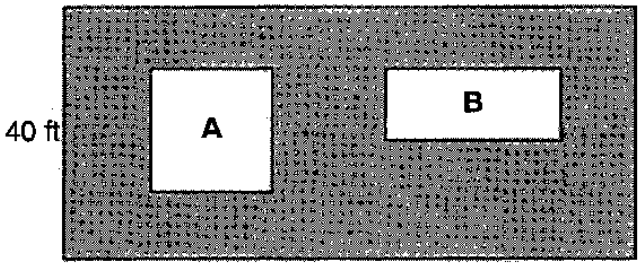
GO ON

B. How many tiles will the contractor need for each region that you listed?

GO ON

Grade 8 Sample Response for Category 5

79. A rectangular courtyard is shown in the diagram below. The shaded portion represents grass, and rectangles A and B are cement pads for picnic tables and chairs. The area of pad A is twice the area of pad B. The remaining area is grass, which has an area of 2,040 square feet. What is the area of **each** cement pad?



NOTE: Figure is **NOT** drawn to scale.

For full credit, you **must** do the following:

1. show OR describe each step of your work, even if you did it in your head ("mental math") or used a calculator,

AND

2. write an explanation stating the mathematical reason(s) **why** you chose each of your steps.

Pad A = 240ft²
Pad B = 120ft²

I arrived at this answer by first multiplying 40ft x 60ft to find the total area of the diagram.

60
x40
2400

After completing this step, I subtracted 2040, which, according to the paragraph up top, is the total grass area, excluding the cement pads. My answer is 360ft² total Area of cement pads.

2400
- 2040
360

Since Pad a is twice the size of Pad b, I divided this number by 3. I got 120ft², the area of pad b. I then multiplied that by 2, to get the area for Pad A.

5 - Student has correct answer (240 ft^2 and 120 ft^2) with all correct procedures and calculations shown and/or described with full explanation of reasons why each step was taken (The phrases: "to find;" "since;" and "to get" trigger those explanations).