



**Grade 9 Mathematics
Common Mathematics Assessment**

June 11, 2013

Name: _____

Mathematics _____

Teacher: _____

Selected Response

25 marks

Constructed Response

35 marks

FINAL

60 Marks

Calculator permitted.

Diagrams are NOT necessarily drawn to scale.

PART A - Selected Response:

Circle the appropriate response on the answer sheet or SCANTRON.

1. Which is a square number?

- (A) 0.09
- (B) 0.144
- (C) $\frac{6}{10}$
- (D) $\frac{16}{7}$

2. What is the square root of $\frac{32}{162}$?

- (A) $\frac{2}{3}$
- (B) $\frac{4}{9}$
- (C) $\frac{16}{81}$
- (D) $\frac{1024}{26\ 244}$

3. Which expression is equivalent to -5 ?

- (A) $-2^2 + (-2^0)$
- (B) $-2^2 - (-2^0)$
- (C) $(-2)^0 \times (-2)^2$
- (D) $(-2)^0 \div (-2)^2$

4. An incorrect solution is shown for evaluating the expression below. In which step was the **first** mistake made?

$$(-3)^2 + 2^2 \times 2^3 - 4^0$$

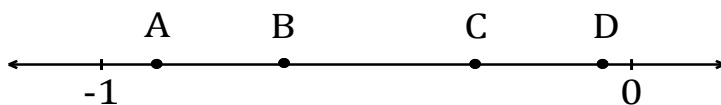
<i>Step 1</i>	$9 + 2^2 \times 2^3 - 4^0$
<i>Step 2</i>	$9 + 2^6 - 4^0$
<i>Step 3</i>	$9 + 64 - 1$
<i>Step 4</i>	74

- (A) 1
- (B) 2
- (C) 3
- (D) 4

5. Which number is between $-\frac{1}{4}$ and -0.3 ?

- (A) -0.08
- (B) -0.18
- (C) -0.28
- (D) -0.38

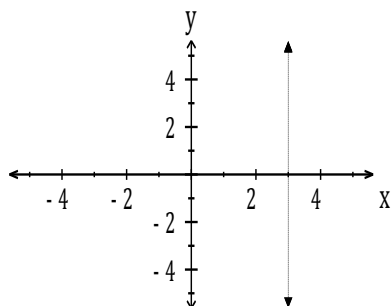
6. Which point is closest to $-\frac{2}{3}$?



- (A) A
(B) B
(C) C
(D) D
7. Which point would lie on the line $2x - 3y = -7$?

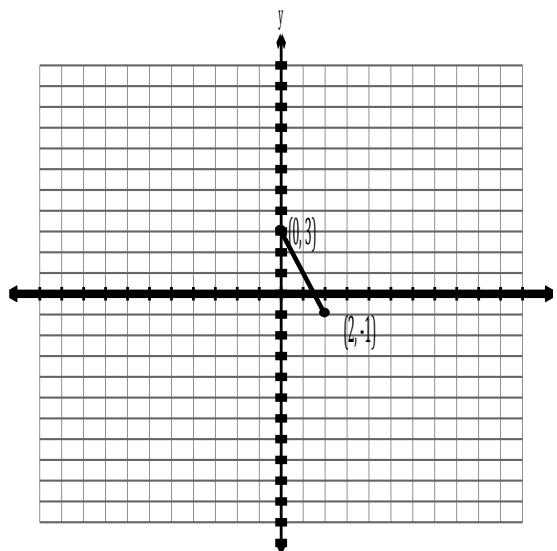
- (A) $(-2, 1)$
(B) $(-1, 2)$
(C) $(1, -2)$
(D) $(2, -1)$

8. What is the equation of the dashed line shown on the graph?



- (A) $x + y = 3$
(B) $x - y = 3$
(C) $x = 3$
(D) $y = 3$
9. The graph represents a linear equation. Determine the value of y when $x = 6$.

- (A) -9
(B) -7
(C) -5
(D) -1.5



10. Which equation would produce the given table of values?

- (A) $y = -4.5x - 100$
- (B) $y = -4.5x + 100$
- (C) $y = 4.5x - 100$
- (D) $y = 4.5x + 100$

x	y
0	100
1	95.5
2	91
3	86.5
4	82
5	77.5

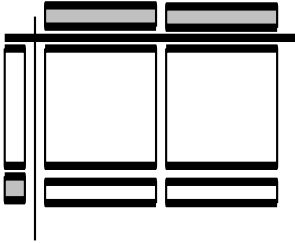
11. What is a simplified expression for $(3x^2 - 5x + 2) + (1 - x + 6x^2)$?

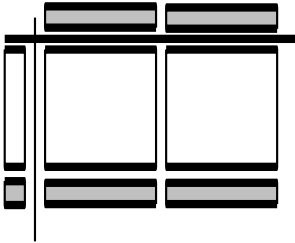
- (A) $3x^2 - 6x + 3$
- (B) $4x^2 - 6x + 8$
- (C) $4x^2 + 5x + 2$
- (D) $9x^2 - 6x + 3$

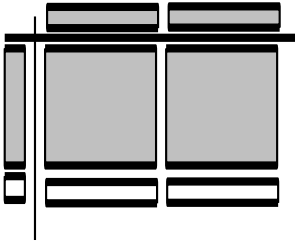
12. Which model represents the product $2x(x - 1)$?

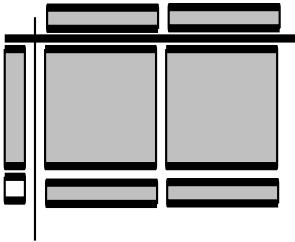
Note:

= positive = negative

(A) 

(B) 

(C) 

(D) 

13. What is the quotient of $\frac{16x^6 - 4x^2}{4x^2}$?

- (A) $4x^3$
- (B) $4x^4$
- (C) $4x^3 - 1$
- (D) $4x^4 - 1$

14. Solve: $\frac{10}{x} = 3$

(A) $x = \frac{3}{10}$

(B) $x = \frac{10}{3}$

(C) $x = 7$

(D) $x = 30$

15. Solve: $0.5(2x + 4) = 12$

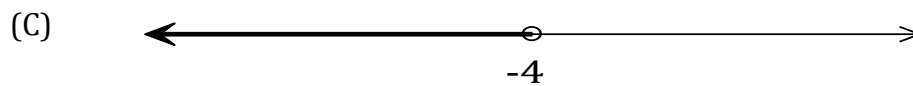
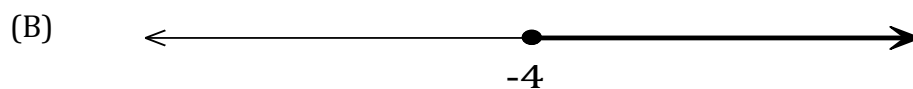
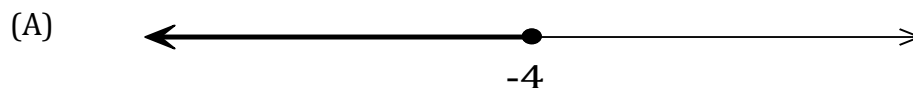
(A) $x = 8$

(B) $x = 10$

(C) $x = 14$

(D) $x = 16$

16. Which represents the solution set $x < -4$?



17. Which has solution $x \geq -3$?

(A) $-3x + 2 \leq 11$

(B) $-2x - 1 \geq 5$

(C) $2x - 1 \geq 5$

(D) $3x + 2 \leq 11$

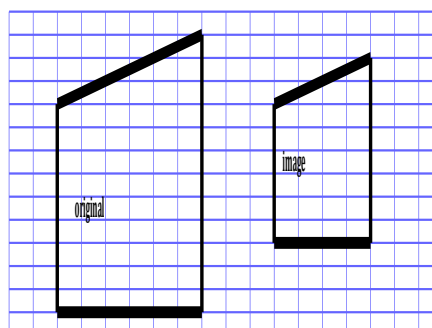
18. What is the scale factor for the image?

(A) $\frac{1}{2}$

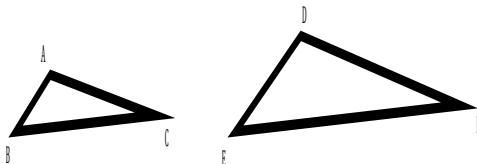
(B) $\frac{2}{3}$

(C) $\frac{3}{2}$

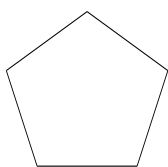
(D) $\frac{2}{1}$



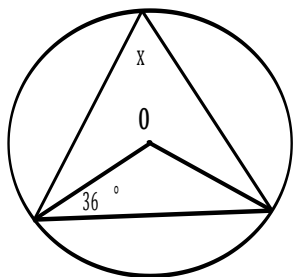
19. Given that $\triangle ABC \sim \triangle DEF$, which statement is true?



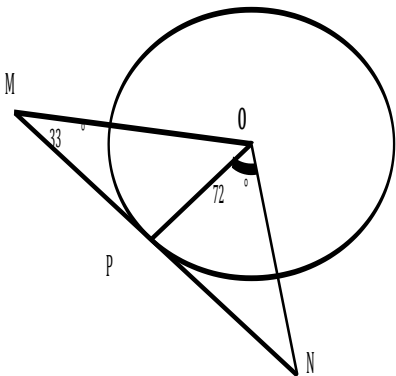
- (A) $\frac{AB}{DE} = \frac{BC}{DF}$
- (B) $\frac{BC}{EF} = \frac{AC}{FE}$
- (C) $\frac{DE}{AC} = \frac{EF}{BC}$
- (D) $\frac{DF}{AC} = \frac{EF}{BC}$
20. In the regular pentagon shown, what is the angle and order of rotational symmetry?



- (A) 60° , 6
- (B) 72° , 5
- (C) 90° , 4
- (D) 120° , 3
21. Given the circle with center O, what is the value of x ?

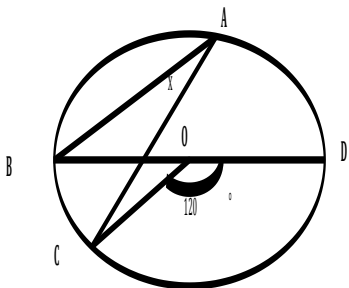


- (A) 36°
- (B) 54°
- (C) 72°
- (D) 108°
22. In the circle with center, O, and point of tangency, P, $\angle M = 33^\circ$ and $\angle PON = 72^\circ$. What is the measure of $\angle MON$?



- (A) 57°
- (B) 105°
- (C) 129°
- (D) 147°

23. In the circle with center, O , $\angle COD = 120^\circ$. Determine the value of x .



- (A) 30°
(B) 40°
(C) 50°
(D) 60°
24. A teacher conducted a survey in her class by asking: “Don’t you think the school should provide paper and pencils for all students?” What potential problem is present with the teacher’s survey?
- (A) cultural sensitivity
(B) privacy
(C) timing
(D) use of language
25. Which would best be surveyed using an entire population?
- (A) taste-testing muffins in a bakery
(B) testing the volume of air a helium balloon would hold before breaking
(C) testing the length of time a battery will last
(D) testing seat belt buckles in a new vehicle

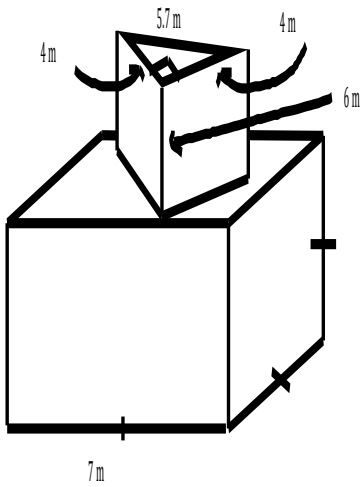
PART B - Constructed Response.

Complete all questions on this paper. Show all workings for full credit.

26. Use benchmarks to estimate $\sqrt{0.41}$ to two decimal places. Justify your answer. [1 mark]

27. Find the surface area of the composite figure shown.

[3 marks]



28. Write the given expression as a single power and evaluate.

[2 marks]

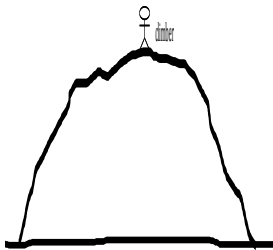
$$\frac{(3^9)(3^7)}{(3^6)^2}$$

29. Simplify the given expression. All calculations must be completed using fractional form.

[3 marks]

$$\frac{2}{3} \div \left(-\frac{1}{4}\right)^2 + \frac{1}{2} \times \frac{1}{3}$$

30. A mountain climber has to descend a distance of 750 m to the base of a mountain. He descends at a rate of 85.2 m per hour. Write and evaluate an expression to determine how far he is from the base of the mountain after 5 hours. [2 marks]



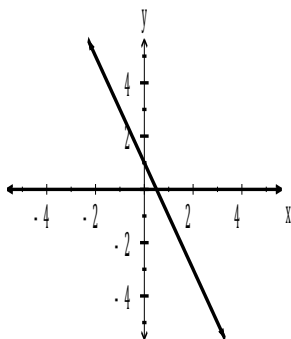
31. Match the following equations with the appropriate graph. Justify your choice. [2 marks]

Equations

A: $4x - y = 1$

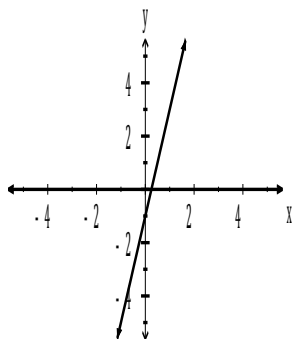
B: $4x + 2y = 2$

Graph 1



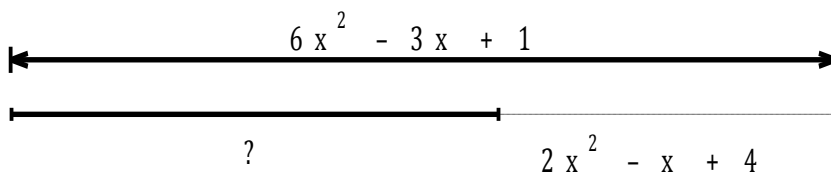
EQUATION: _____

Graph 2



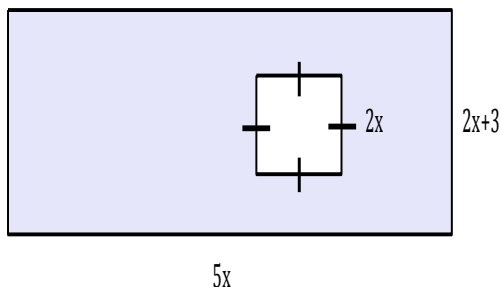
EQUATION: _____

32. A line segment has a length represented by $6x^2 - 3x + 1$. If you remove a piece that has length $2x^2 - x + 4$, how long is the remaining piece? [2 marks]



33. Write a simplified polynomial for the shaded area:

[2 marks]



34. Solve. All calculations must be completed using fractional form.

[2 marks]

$$\frac{4x}{7} + \frac{2}{3} = 2$$

35. Without solving, verify that the solution to the given equation is $a = -10$.

[1 mark]

$$3.4(a - 5) = 5a - 1$$

36. Two bus companies charge as follows for a trip:

Company A: \$200 plus \$2 per person

Company B: \$100 plus \$4 per person

Write an equation to determine the number of people (p) for which both companies charge the same amount. **Solve** the equation algebraically.

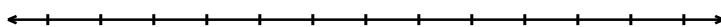
[2 marks]

37. The cost to buy a pizza is \$7 plus \$1.50 for each topping added. Robyn has \$20 to spend on a pizza.

- a) Write an inequality and use it to determine the number of toppings, (t), that she could have on the pizza. [2 marks]

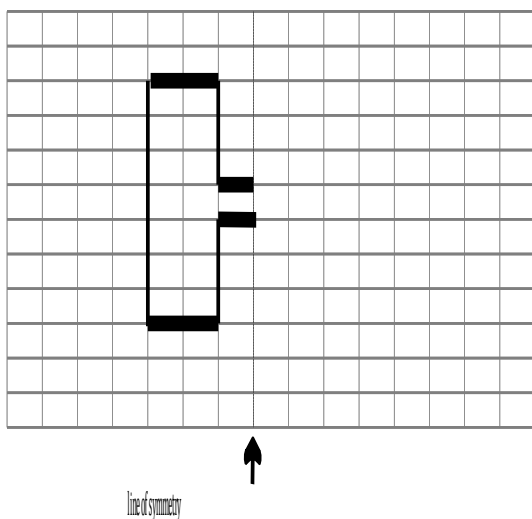
[1 mark]

- b) Graph the solution to the inequality on the number line below.



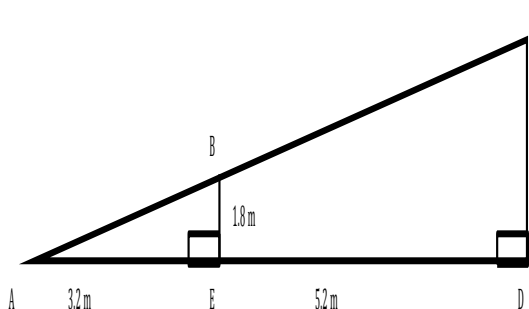
38. The partial figure shown represents half of a total figure. Use the line of symmetry to complete the entire figure. [1 mark]

[1 mark]



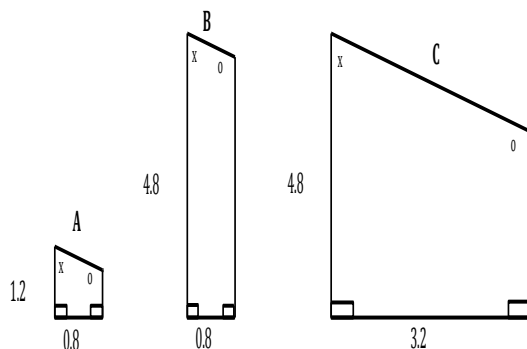
39. Find the length of CD in the diagram below. Do not round. Justify your answer.

[2 marks]



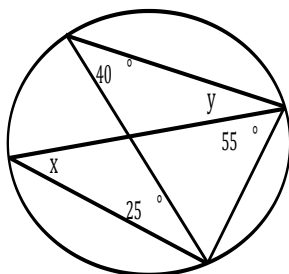
40. Which two polygons are similar? Justify your answer.

[2 marks]



41. Determine the measures of angles x and y .

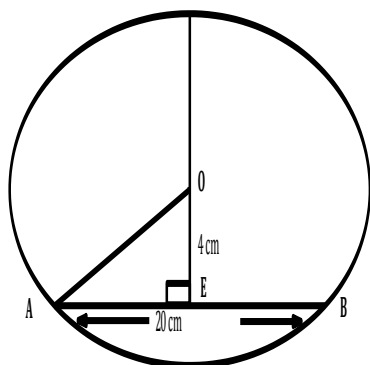
[1 mark]



$x =$ _____ $y =$ _____

42. In the circle with center, O , $\overline{OE} = 4 \text{ cm}$ and $\overline{AB} = 20 \text{ cm}$. What is the length of the diameter to the nearest tenth?

[2 marks]



43. There are 10 green marbles and 6 red marbles in a container. Mary knows there is a greater probability of choosing a green marble. Is this based on experimental probability, theoretical probability, or subjective judgement? Justify your answer.

[2 marks]

Grade 9 Common Mathematics Assessment - June 2013

Answer Sheet

Student's Name _____

Math Teacher _____

- | | | | | |
|-----|---|---|---|---|
| 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. | A | B | C | D |
| 10. | A | B | C | D |
| 11. | A | B | C | D |
| 12. | A | B | C | D |
| 13. | A | B | C | D |
| 14. | A | B | C | D |
| 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 |
| 23. | A | B | C | D |
| 24. | A | B | C | D |
| 25. | A | B | C | D |