



Mathematics 1201
Common Mathematics Assessment

Name: _____
Mathematics _____
Teacher: _____

28 Selected Response
13 Constructed Response
FINAL

28 marks
42 marks

70 Marks

FORMULAE

Surface Area

Cylinder $2\pi r^2 + 2\pi rh$	Cone $\pi r^2 + \pi rs$	Sphere $4\pi r^2$
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Volume

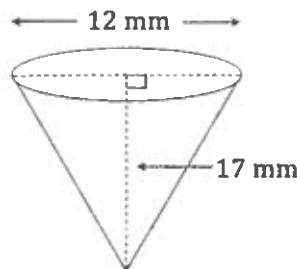
Pyramid $\frac{1}{3}Ah$	Cone $\frac{1}{3}\pi r^2 h$	Sphere $\frac{4}{3}\pi r^3$
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Selected Response:

Circle the appropriate response on the answer sheet or SCANTRON.

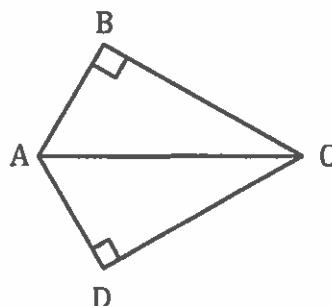
1. What is the slant height of a cone with diameter 12 mm and height 17 mm ?

- (A) 16 mm
- (B) 17 mm
- (C) 18 mm
- (D) 21 mm



2. What is the adjacent side to $\angle DAC$?

- (A) AD
- (B) BA
- (C) CA
- (D) DC

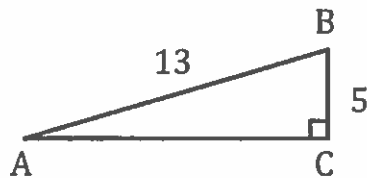


3. What is the measure of $\angle A$, to the nearest degree, if $\tan A = 0.8725$?

- (A) 34°
- (B) 41°
- (C) 49°
- (D) 61°

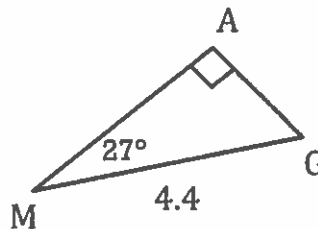
4. Which ratio represents $\sin B$?

- (A) $\frac{5}{13}$
- (B) $\frac{12}{13}$
- (C) $\frac{13}{12}$
- (D) $\frac{13}{5}$



5. What is the length of side MA to the nearest tenth?

- (A) 2.0
- (B) 2.2
- (C) 3.9
- (D) 4.9



6. Simplify: $\sqrt[3]{108}$

- (A) $3\sqrt[3]{4}$
- (B) $27\sqrt[3]{4}$
- (C) $6\sqrt[3]{3}$
- (D) $36\sqrt[3]{3}$

7. Which statement is true about 3600?

- (A) It is a perfect cube.
- (B) Its only factors are 360 and 10.
- (C) Its square root is an irrational number.
- (D) Its prime factorization is $2^4 \cdot 3^2 \cdot 5^2$.

8. What is $\sqrt[3]{5^2}$ expressed as a power?

- (A) $5^{-\frac{3}{2}}$
- (B) $5^{-\frac{2}{3}}$
- (C) $5^{\frac{2}{3}}$
- (D) $5^{\frac{3}{2}}$

9. A student did not receive full marks for her solution to the question below. In which step did she make the first error?

Simplify: $\frac{(a^{-2}b^7)^{-5}}{(a^2b^{-3})^3}$

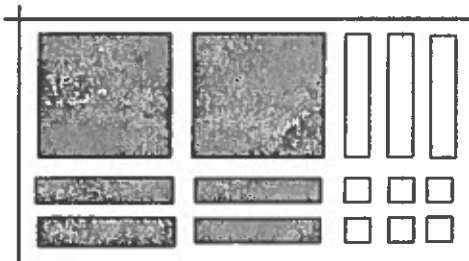
Solution: Step 1: $\frac{a^{-7}b^2}{a^5b^0}$

Step 2: $a^{-7-5} b^{2-0}$

Step 3: $a^{-12}b^2$

Step 4: $\frac{b^2}{-a^{12}}$

- (A) 1
 (B) 2
 (C) 3
 (D) 4
10. Which binomial product is modelled?

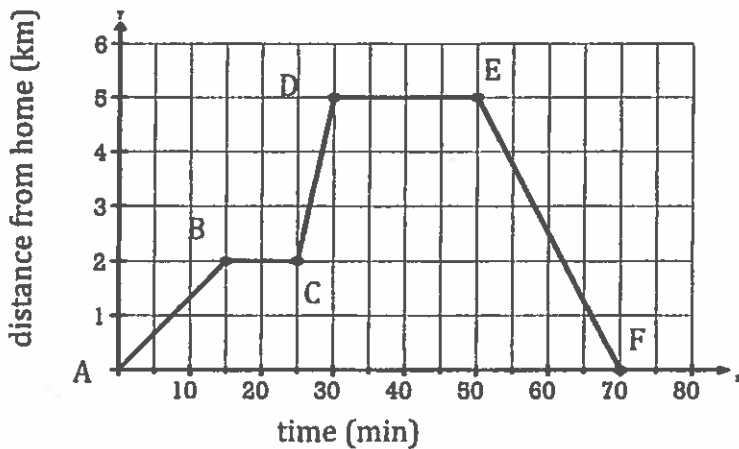


Note: = negative = positive

- (A) $(-2x + 3)(-x + 2)$
 (B) $(-2x + 3)(x + 2)$
 (C) $(2x - 3)(x + 2)$
 (D) $(2x - 3)(x - 2)$
11. Expand and simplify: $(a - 3b)(2a - b)$
- (A) $2a^2 + 3b^2$
 (B) $3a - 4b$
 (C) $2a^2 - 7ab + 3b^2$
 (D) $3a^2 - 6ab - 4b^2$
12. What is the greatest common factor of $16x^2y^3$, $8x^3y^2$, and $-24x^3y^3$?
- (A) $4x^2y^2$
 (B) $4x^3y^3$
 (C) $8x^2y^2$
 (D) $8x^3y^3$
13. Factor completely: $x^2 - 6x + 5$
- (A) $(x - 1)(x - 5)$
 (B) $(x - 2)(x - 3)$
 (C) $(x - 1)(x + 5)$
 (D) $(x + 6)(x - 1)$
14. Factor completely: $4x^2 - 36$
- (A) $2(2x^2 - 18)$
 (B) $4(x^2 - 9)$
 (C) $(2x - 6)(2x + 6)$
 (D) $4(x - 3)(x + 3)$

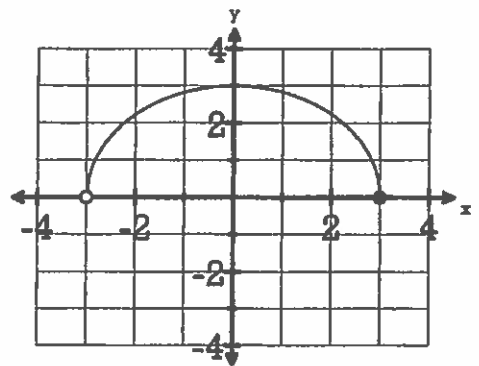
15. What is the missing value if the given polynomial is a perfect square trinomial?
 $25x^2 + [?] + 16$
- (A) $9x$
 (B) $18x$
 (C) $20x$
 (D) $40x$
16. If the amount of gas remaining in your gas tank is affected by the distance travelled, what is the dependent variable?
- (A) the amount of gas in your tank
 (B) the amount of time
 (C) the cost of gas
 (D) the distance travelled
17. Which set of ordered pairs represents a function?
- (A) $\{(-3, -8), (-1, -7), (-2, -6), (-1, -5)\}$
 (B) $\{(-8, 0), (-6, 5), (4, -1), (7, 0)\}$
 (C) $\{(4, 1), (4, 2), (3, 4), (4, 4)\}$
 (D) $\{(2, 5), (3, 8), (4, 11), (2, 1)\}$

18. The graph describes Mackenzie's activity during a bike ride. What does segment EF represent?



- (A) Mackenzie stops at a friend's house.
 (B) Mackenzie rides downhill.
 (C) Mackenzie leaves home.
 (D) Mackenzie returns home.
19. What is the domain of the function shown?

- (A) $\{x \mid -3 < x \leq 3, x \in \mathbb{R}\}$
 (B) $\{x \mid -3 \leq x \leq 3, x \in \mathbb{R}\}$
 (C) $\{y \mid 0 \leq y \leq 3, y \in \mathbb{R}\}$
 (D) $\{y \mid -3 < y \leq 0, y \in \mathbb{R}\}$

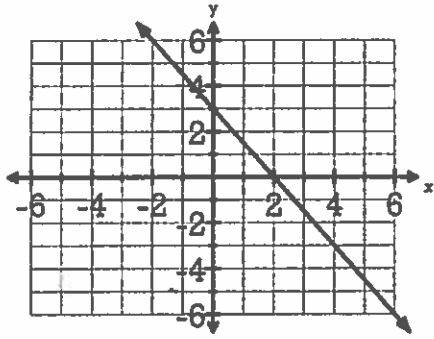


20. What is the rate of change in the given table?

- (A) $\frac{1}{5}$
 (B) $\frac{1}{2}$
 (C) 2
 (D) 5

d	C(d)
0	75
10	77
20	79
30	81
40	83

21. What is the equation of the line graphed?



- (A) $y = -\frac{3}{2}x + 2$
(B) $y = -\frac{3}{2}x + 3$
(C) $y = -\frac{2}{3}x + 2$
(D) $y = -\frac{2}{3}x + 3$
22. What is the slope of a line **perpendicular** to $y = -\frac{1}{7}x + 5$?
- (A) -7
(B) $-\frac{1}{7}$
(C) $\frac{1}{7}$
(D) 7
23. What is the equation of the line, in slope-point form, that has slope $\frac{4}{5}$, and passes through the point $(9, -1)$?
- (A) $y - 1 = \frac{4}{5}(x + 9)$
(B) $y - 1 = \frac{5}{4}(x + 9)$
(C) $y + 1 = \frac{4}{5}(x - 9)$
(D) $y + 1 = \frac{5}{4}(x - 9)$
24. What is the expression for the slope between points (a, b) and (c, d) ?
- (A) $\frac{a - b}{c - d}$
(B) $\frac{a - c}{b - d}$
(C) $\frac{c - d}{a - b}$
(D) $\frac{d - b}{c - a}$

25. Which system models the given situation?

A collection of nickels (n) and dimes (d) contains four times as many dimes as nickels. The total value of the collection is \$20.25.

- (A) $\begin{cases} d = 4n \\ 0.05d + 0.10n = 20.25 \end{cases}$
- (B) $\begin{cases} d = 4n \\ 0.10d + 0.05n = 20.25 \end{cases}$
- (C) $\begin{cases} n = 4d \\ 0.05n + 0.10d = 20.25 \end{cases}$
- (D) $\begin{cases} n = 4d \\ 0.10n + 0.05d = 20.25 \end{cases}$

26. How many solutions does the given system have?

$$y = \frac{4}{6}x + 8$$

$$y = \frac{2}{3}x - 4$$

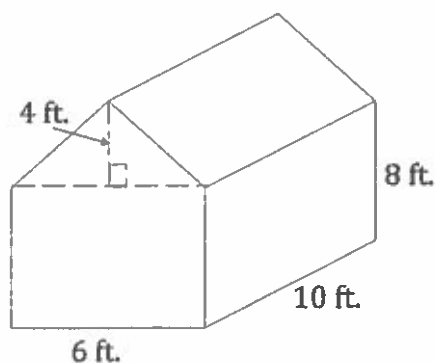
- (A) none
(B) one
(C) two
(D) infinite

Constructed Response:

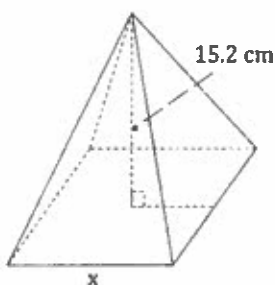
Answers to be written on this paper in the space provided. Show all workings.

27. A shed is constructed by using a rectangular prism for the walls with a triangular prism for the roof. Determine the surface area of the garage to the nearest square foot. (Do not include the shed floor.)

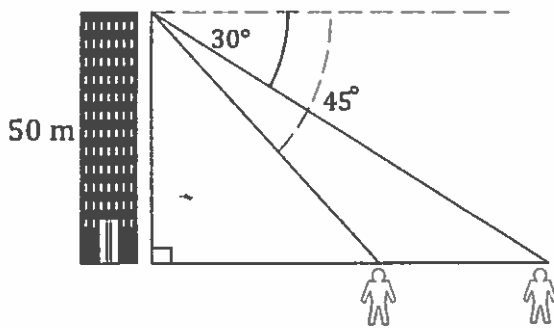
[4 points]



28. A right square pyramid has a volume of 182.4 cm^3 . Determine the side length of its base to the nearest cm. [2 points]



29. From the top of a 50 m building, an observer spots two joggers. The first jogger is at an angle of depression of 45° and the second is at an angle of depression of 30° . How far apart (to the nearest tenth of a metre) are the two joggers? [4 points]



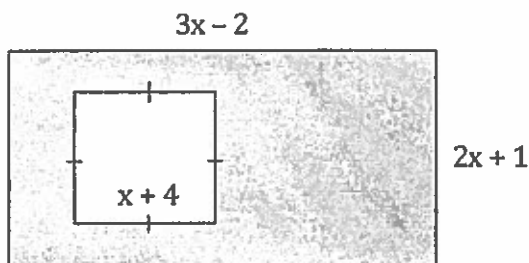
30. A polling organization uses the telephone book to randomly select people for a survey. They choose every 20th person to ask question #1, every 28th person to ask question #2, and every 30th person to ask question #3. In which position in the phone book is the first person to be asked all three questions? [3 points]

31. The area of a square is $121x^4y^2$. What is the expression for the perimeter of the square? [2 points]

32. Simplify: $\left(\frac{-54x^6y}{2x^{-3}y^4}\right)^{\frac{4}{3}}$ [4 points]

33. Expand and simplify: $(2x - 5)(x + 7)^2$ [3 points]

34. Determine the expression, in simplest form, for the area of the shaded region: [3 points]



35. Factor completely: $5x^2 - 9x - 18$ [3 points]

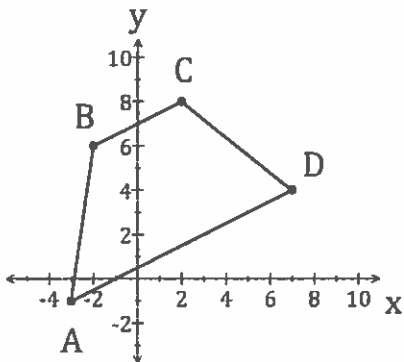
36. The cost of printing advertising flyers for a school play is represented by the function $C(f) = 0.80f + 10.00$, where C is total cost in dollars and f is the number of flyers. [4 points]

a) If $C(f) = 86.00$, determine the value of f . Explain what this situation means.

b) Does this function represent discrete or continuous data? Explain.

39. Write the equation, in the form $Ax + By + C = 0$, of the line that passes through the points $(4, 5)$ and $(-6, 10)$. [3 points]

40. A trapezoid is defined as a quadrilateral with exactly one pair of parallel sides. Show that the points $A(-3, -1)$, $B(-2, 6)$, $C(2, 8)$, and $D(7, 4)$ can be joined to form a trapezoid. [3 points]



41. Solve:
$$\begin{cases} \frac{3}{2}x - 2y = -8 \\ 4x + 3y = -13 \end{cases}$$

[4 points]