DO NOT OPEN THIS EXAMINATION PAPER UNTIL YOU ARE TOLD BY THE SUPERVISOR TO BEGIN

Newfoundland & Labrador English School District

Mathematics 1201

Final Examination

June, 2018

Student Name: _____

Teacher Name: _____

Total Value: 70 marks Time: 2 Hours

GENERAL INSTRUCTIONS

1. Candidates are required to do all items.

2. The examination has a total of 18 pages (including this cover) consisting of the following parts:

Part I:	35 Selected Response Items	Value:	35 marks
Part II:	12 Constructed Response Questions	Value:	35 marks

3. **Page 16 is a formulae sheet** to be used for the exam. This page may be removed.

4. **Part I** should be completed on the **answer sheet (Page 17)**. This page may be removed.

5. Answers to the constructed response questions for **Part II** are to be placed on this paper in the spaces provided.

6. For **Part II** items, candidates are reminded to show **ALL** necessary steps and calculations. Partial credit may be awarded for logical work even though you might not arrive at the correct solution. Correct answers without appropriate calculations will not merit full marks.

7. A self-powered calculator may be used for calculations and to obtain special values. Graphing calculators are to be reset before the examination begins.

REGULATIONS FOR CANDIDATES

Candidates are expected to be thoroughly familiar with all regulations pertaining to their conduct during examinations. Candidates must comply with all requirements governing the following matters.

- Materials required
- Leaving the room
- Materials not permitted
- Models of calculators permitted
- Use of pen or pencil
- Use of unauthorized means and penalties
- Completion of required information
- Communication during the exam

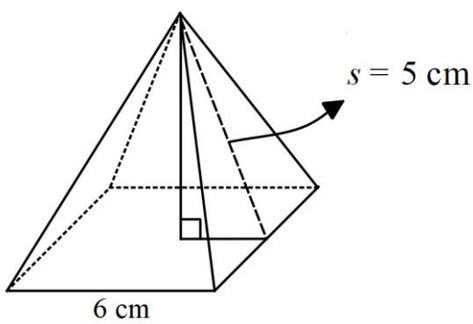
Part I
Total Value: 35 Marks

1. Which would you use as a referent for an inch?
   A) length of your foot
   B) thickness of a dime
   C) width of your thumb
   D) your arm span

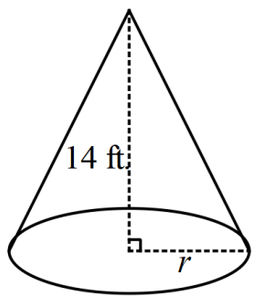
2. What is 9 yards (yd.) to the nearest centimetre (cm)?
   A) 91
   B) 128
   C) 324
   D) 823

3. A soccer ball has a radius of 11 cm. What is the surface area of the soccer ball in cm^2?
   A) 276
   B) 1520
   C) 5572
   D) 19088

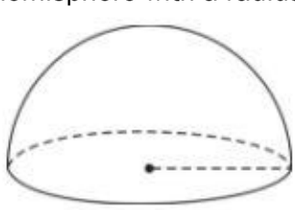
4. What is the surface area of the right square pyramid to the nearest cm^2?
   A) 66
   B) 84
   C) 96
   D) 156



5. A cone has a volume of 1465 cubic feet (ft^3). What is the radius to the nearest foot (ft)?
   A) 6
   B) 10
   C) 50
   D) 100



6. What is the surface area of a hemisphere with a radius of 4 cm, in cm^2 ?
   A) 75
   B) 100
   C) 151
   D) 201



7. What is $\sqrt[4]{162}$ in simplest radical form?

A) $2\sqrt[4]{3}$

B) $3\sqrt[4]{2}$

C) $9\sqrt[4]{2}$

D) $2\sqrt[4]{9}$

8. What is the least common multiple for 21 and 45?

A) 105

B) 210

C) 315

D) 945

9. Which is a rational number?

A) $\sqrt{16}$

B) $\sqrt{20}$

C) $\sqrt[3]{35}$

D) $\sqrt[3]{60}$

10. What is $2\sqrt[3]{5}$ expressed as an entire radical?

A) $\sqrt[3]{7}$

B) $\sqrt[3]{10}$

C) $\sqrt[3]{20}$

D) $\sqrt[3]{40}$

11. Simplify: $(a^3b^4)(a^{-2}b)$

A) $\frac{b^4}{a^6}$

B) $\frac{b^4}{a^5}$

C) a^5b^3

D) ab^5

12. Simplify: $\frac{m^6n^4}{m^3n^8}$

A) $\frac{m^2}{n^2}$

B) $\frac{m^3}{n^4}$

C) m^3n^4

D) m^9n^{12}

13. Which is equivalent to $\left(\sqrt{\frac{3}{4}}\right)^{-3}$?

A) $\left(-\frac{4}{3}\right)^{\frac{3}{2}}$

B) $\left(-\frac{3}{4}\right)^{\frac{3}{2}}$

C) $\left(\frac{3}{4}\right)^{\frac{2}{3}}$

D) $\left(\frac{4}{3}\right)^{\frac{3}{2}}$

14. Expand: $2x(3x+1)$

A) $5x^2+3x$

B) $6x+2$

C) $6x^2+1$

D) $6x^2+2x$

15. What is the greatest common factor of $8a^2b^3+4ab$?

A) $2ab$

B) $2a^2b$

C) $4ab$

D) $4a^2b^3$

16. Expand and simplify $(3x-2)(5x+3)$

A) $15x^2-x-6$

B) $15x^2-x+6$

C) $15x^2-4x-6$

D) $15x^2+19x+6$

17. Factor: $x^2-13x+36$

A) $(x+3)(x+12)$

B) $(x-2)(x-18)$

C) $(x+6)(x-6)$

D) $(x-4)(x-9)$

18. Factor: $18k^2 - 50$

A) $2(3k - 5)(3k + 5)$

B) $2(3k - 5)(3k - 5)$

C) $(9k - 25)(9k + 25)$

D) $(9k - 25)(9k - 25)$

19. Factor: $9x^2 - 24x + 16$

A) $(3x - 4)(3x - 4)$

B) $(3x - 8)(3x - 8)$

C) $(3x + 4)(3x + 4)$

D) $(3x + 8)(3x + 8)$

20. Factor: $2x^2 - 2x - 12$

A) $2(x - 2)(x + 3)$

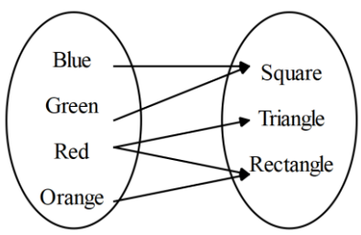
B) $2(x - 6)(x + 1)$

C) $2(x + 2)(x - 3)$

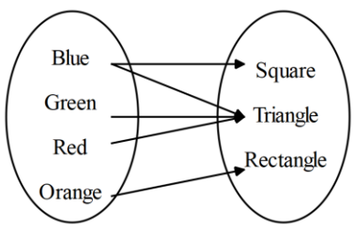
D) $2(x + 6)(x - 1)$

21. Which diagram represents a function?

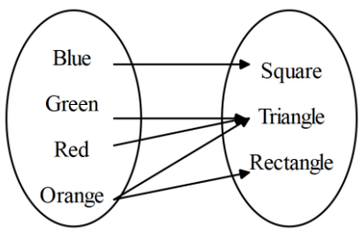
A)



B)



C)



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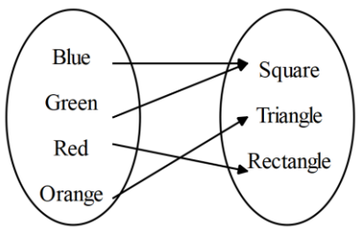


22. If $f(x) = 2x + 1$ and $g(x) = 3x - 2$, what is the value of $f(2) \times g(3)$?

A) 12

B) 13

C) 28

D) 35

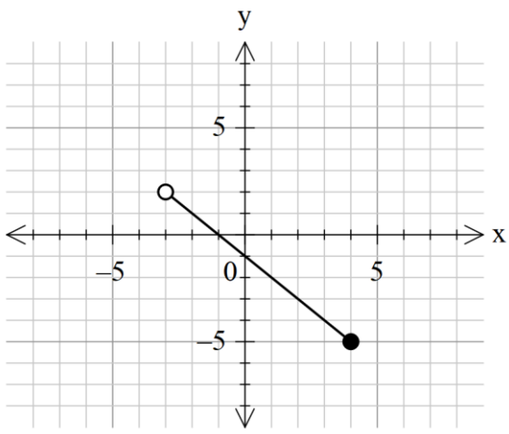
23. What is the domain and range of the graph?

A) $\{x|-3 \leq x \leq 4, x \in \mathbb{R}\}$
$\{y|-5 \leq y \leq 2, y \in \mathbb{R}\}$

B) $\{x|-3 < x \leq 4, x \in \mathbb{R}\}$
$\{y|-5 \leq y < 2, y \in \mathbb{R}\}$

C) $\{x|-3 < x < 4, x \in \mathbb{R}\}$
$\{y|-5 < y < 2, y \in \mathbb{R}\}$

D) $\{x|-3 \leq x < 4, x \in \mathbb{R}\}$
$\{y|-5 < y \leq 2, y \in \mathbb{R}\}$



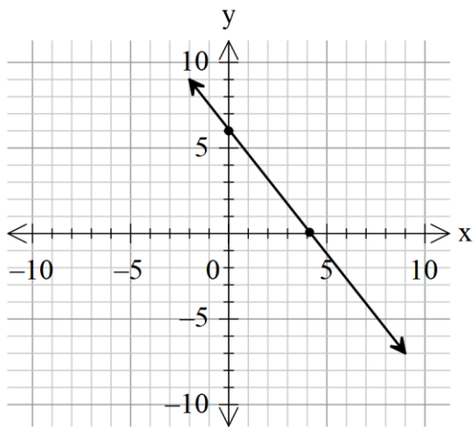
24. What is the equation of the line?

A) $y = -\frac{3}{2}x + 6$

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

C) $y = \frac{3}{2}x + 6$

D) $y = \frac{3}{2}x + 4$



25. What is the equation of the line that passes through $(-1, 4)$ with a slope of 5?

A) $(y - 4) = 5(x + 1)$

B) $(y - 1) = 5(x + 4)$

C) $(y - 4) = 5(x - 1)$

D) $(y + 1) = 5(x - 4)$

26. What is the slope of a line perpendicular to $y = -\frac{4}{3}x + 2$?

A) $-\frac{4}{3}$

B) $-\frac{3}{4}$

C) $\frac{4}{3}$

D) $\frac{3}{4}$

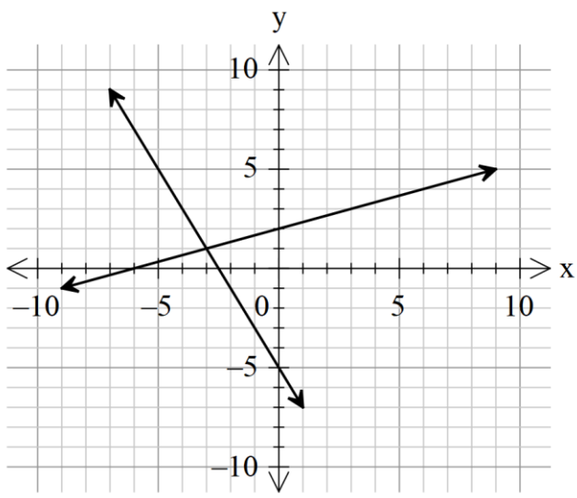
27. What is the solution to the following system of equations?

A) $(-6, 0)$

B) $(-3, 1)$

C) $(0, -5)$

D) $(0, 2)$



28. Declan has \$2.50 worth of nickels and dimes. If he has 36 coins in total, which system of linear equations models this situation?

A) $\begin{cases} n + d = 2.50 \\ 0.05n + 0.10d = 36 \end{cases}$

B) $\begin{cases} n + d = 2.50 \\ 0.10n + 0.05d = 36 \end{cases}$

C) $\begin{cases} n + d = 36 \\ 0.05n + 0.10d = 2.50 \end{cases}$

D) $\begin{cases} n + d = 36 \\ 0.10n + 0.05d = 2.50 \end{cases}$

29. What is the solution to the system of equations?

$$\begin{cases} 2x + 5y = 6 \\ -2x + 3y = 10 \end{cases}$$

A) $(-9, -2)$

B) $(-2, 2)$

C) $(8, -2)$

D) $(4,\ 6)$

30. Which linear system has an infinite number of solutions?

A) $\begin{cases} y = x + 3 \\ -3x + 3y = 4 \end{cases}$

B) $\begin{cases} 8x + 2y = 6 \\ y = -4x + 3 \end{cases}$

C) $\begin{cases} y = 3x \\ 5x + y = 0 \end{cases}$

D) $\begin{cases} 4x + 8y = 20 \\ y = 2x - 15 \end{cases}$

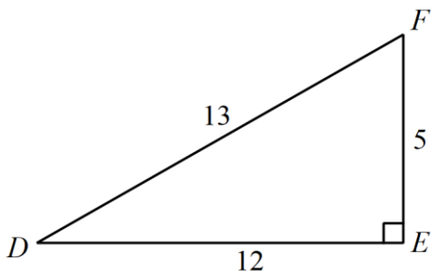
31. In ΔDEF, which of the following is equal to $\frac{5}{13}$?

A) $\sin E$

B) $\sin D$

C) $\tan E$

D) $\tan D$



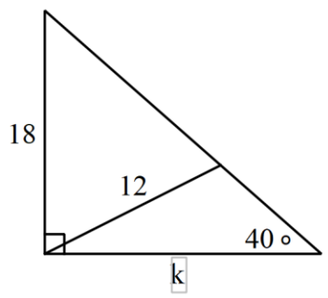
32. Which of the following trigonometric ratios can be used to find the length of k?

A) $\sin 40^0 = \frac{12}{k}$

B) $\sin 40^0 = \frac{k}{12}$

C) $\tan 40^0 = \frac{18}{k}$

D) $\tan 40^0 = \frac{k}{18}$



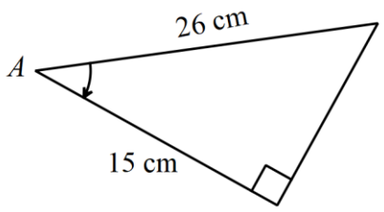
33. What is the measure of $\angle A$?

A) 30^0

B) 35^0

C) 55^0

D) 60^0



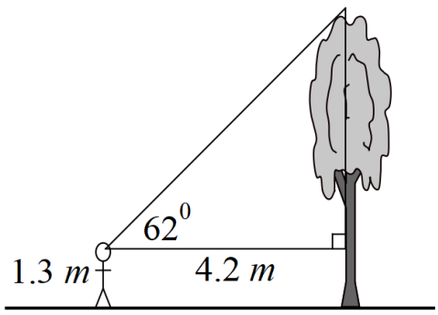
34. Jayne is standing $4.2\ m$ from the base of a tree in her backyard. The angle of inclination from her line of sight to the top of the tree is 62^0. If her eyes are $1.3\ m$ above the ground, what is the height of the tree to the nearest tenth of a metre?

A) 3.7

B) 5.0

C) 9.2

D) 7.9



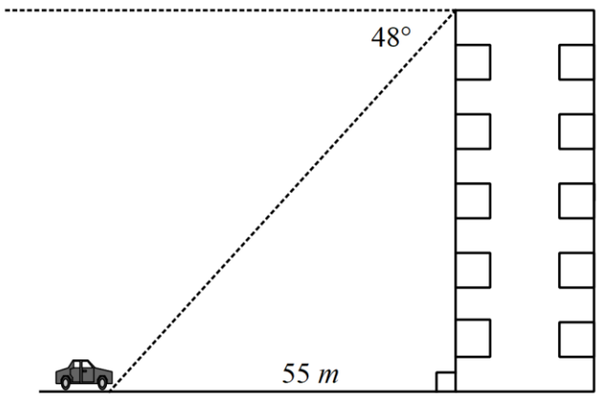
35. A car is observed at an angle of depression of 48^0 from the top of a building. If the car is $55\ m$ from the base of the building, how tall is the building?

A) 49.5 m

B) 61.1 m

C) 74.0 m

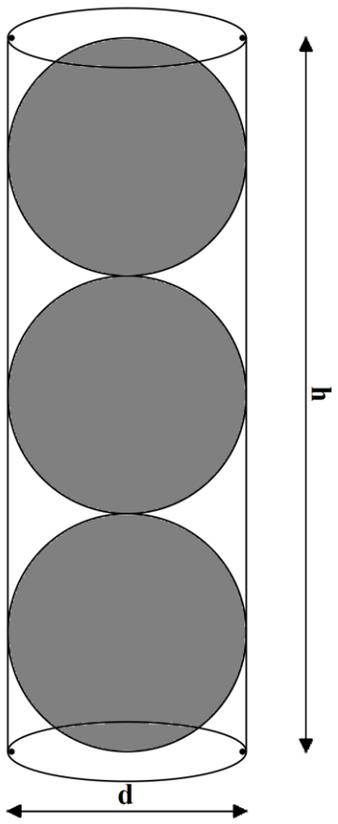
D) 82.2 m



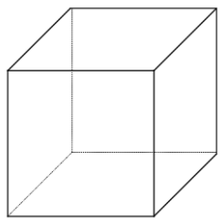
Part II
Total Value: 35 Marks

Value

3 36. Tennis balls are sold 3 per package in a sealed cylindrical tube with a height of 8.5 inches. Each tennis ball has a diameter of 2.7 inches. Calculate the amount of empty space in the tube.



3 37. A) The surface area of a cube is $294\ cm^2$. What is the volume of the cube in cm^3?



Value

3 37. B) Simplify: $\frac{\left(3x^{-1}y^{2}\right)^{2}\left(2x^{2}y^{-1}\right)^{3}}{9x^{2}y^{3}}$

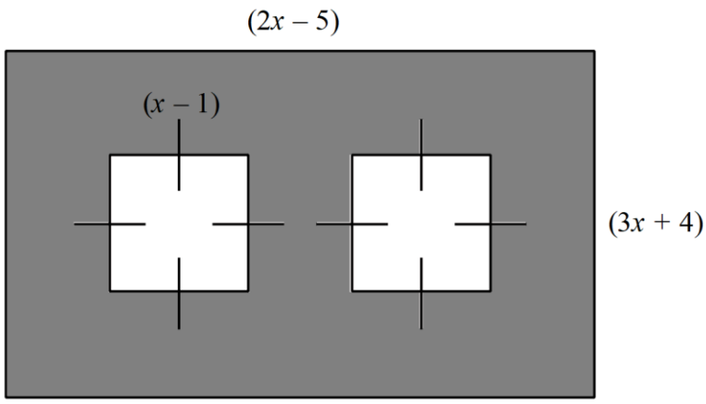
Note: the final answer should contain only positive exponents

2 38. A) Factor completely: $36x^{2}-15x-6$

3 38. B) Expand and Simplify: $(3x^{2}+4y)(2x^{2}-7xy+4y)$

Value

3 38. C) Determine the simplified expression that would represent the area of the shaded region.



39. A) The function $C(n) = 0.70n + 8$, represents the cost, C, in dollars, of downloading n songs from an online music store.

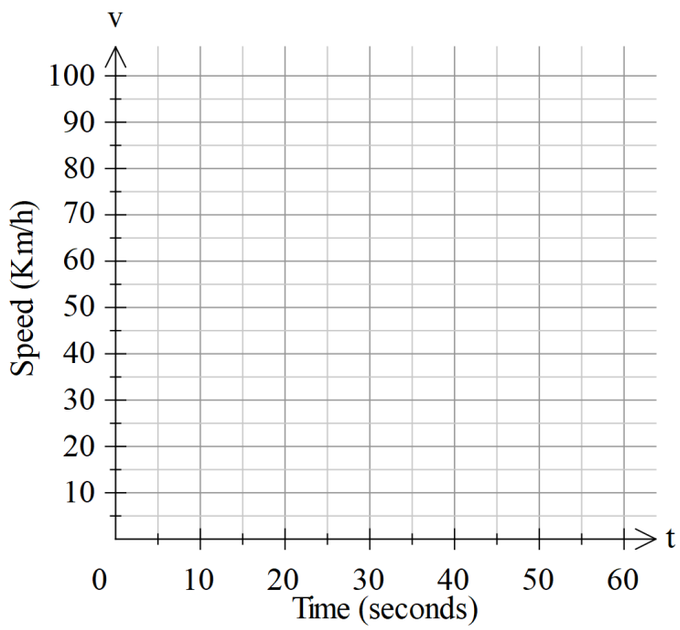
2 i) Determine $C(46)$. What does this number represent?

2 ii) Determine the value of n when $C(n) = 67.50$. What does this number represent?

Value

2 39. B) Sketch the graph that represents a car's speed given:

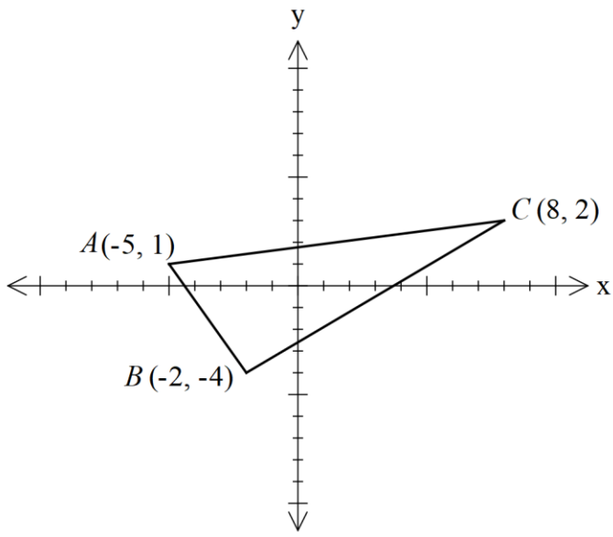
- It travels at 80 Km/h for 10 seconds.
- Over 5 seconds it slows down at a constant rate to 50 Km/h.
- It travels at 50 Km/h for 15 seconds.
- It speeds up to 70 Km/h at a constant rate over 10 seconds.



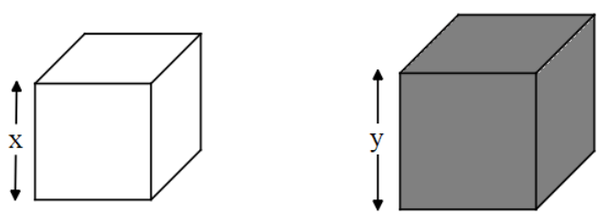
3 40. A) A line passes through the points $(4, 2)$ and $(-8, 6)$. Determine the equation of the line in general form. $(Ax + By + C = 0)$.

Value

3 40. B) Show that ΔABC is a right triangle.



3 41. James is building towers using white and grey cubes. When he stacks 6 white cubes on 3 grey cubes, the tower is 7.5 feet high. When he stacks 2 white cubes on 5 grey cubes, the tower is 6.5 feet high. Write and algebraically solve a system of equations to determine x and y in inches.

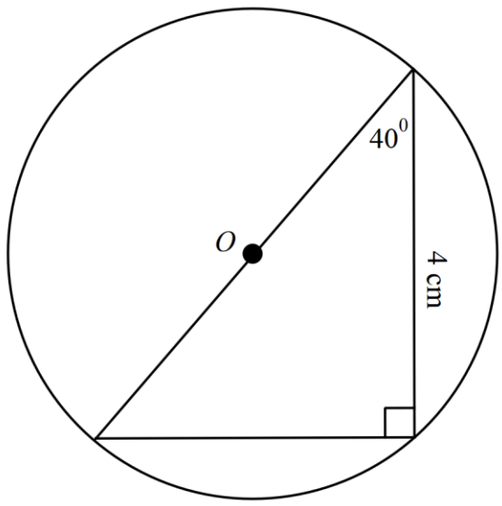


x :_____in.

y :_____in.

Value

3 42. Find the area of the circle with centre O.



END OF EXAM

Math 1201 Formulae Sheet

(This sheet may be removed from the exam paper.)

Measurement

Imperial	Imperial to SI Units
1 ft. = 12 in.	1 in. = 2.54 cm
1 yd. = 3 ft.	1 mi. $\doteq$ 1.6 km
1 mi. = 1760 yd.	

Surface Area and Volume

Surface Area	Volume
Cylinder $A = 2\pi r^2 + 2\pi rh$	Pyramid $V = \frac{1}{3}[l \times w \times h]$
Cone $A = \pi r^2 + \pi rs$	Cone $V = \frac{1}{3}[\pi r^2 h]$
Sphere $A = 4\pi r^2$	Sphere $V = \frac{4}{3}\pi r^3$

Math 1201 Selected Response Answer Sheet

(This sheet may be removed from the exam paper.)

Student Name:_____ Teacher Name:_____

1._____	11. _____	21. _____	31. _____
2. _____	12. _____	22. _____	32. _____
3. _____	13. _____	23. _____	33. _____
4. _____	14. _____	24. _____	34. _____
5. _____	15. _____	25. _____	35. _____
6. _____	16. _____	26. _____	
7. _____	17. _____	27. _____	
8. _____	18. _____	28. _____	
9. _____	19. _____	29. _____	
10. _____	20. _____	30. _____	