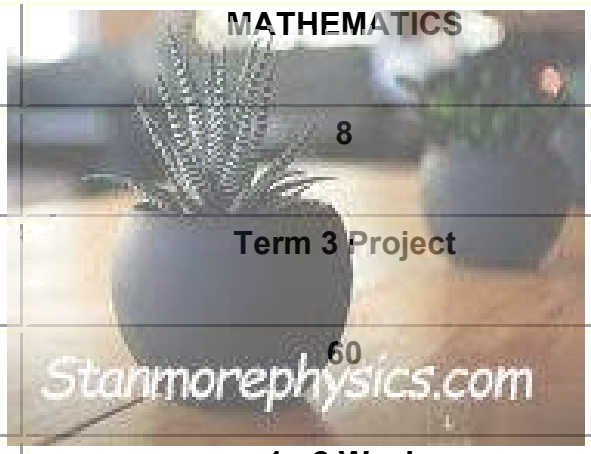
School logo

PROJECT		
SUBJECT	:	MATHEMATICS
GRADE	:	8
TASK	:	Term 3 Project
MARKS	:	60
DURATION	:	1 - 2 Week



NAME OF LEARNER: _____ GRADE 8: ___

Question number	1	2	3	Total
Total marks	20	20	20	60
Learner marks				
Moderated marks				

STREET DESIGN PROJECT

TIME:	3 hours
TARGET AUDIENCE:	Grade 8 learners
REQUIRED PREVIOUS KNOWLEDGE:	Identify and describe lines. Identify and find angles. Draw, Identify and classify 2d shapes.
REQUIRED MATERIALS:	Rulers, A3 paper, pencils , colour pens or pencils, protractor.

Learners will demonstrate their knowledge of parallel lines with a transversal.

STREET DESIGN PROJECT

For this project, each learner will make his or her own map for a fictional residential area. This residential area will consist of parallel lines, perpendicular lines, transversals ,diagrams constructed from 2d shapes, trees and plants.

There are three sections to the project:

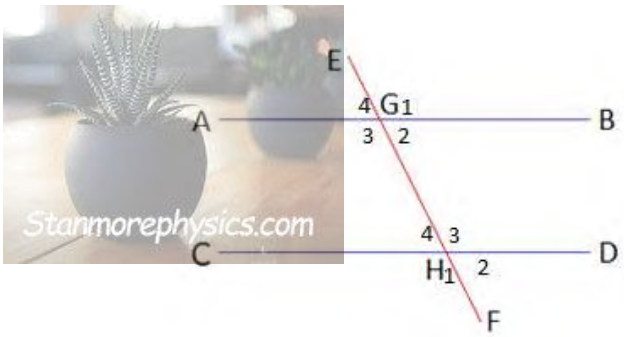
1. Section A is a teacher guided activity on Straight line geometry. This section is marked using a memorandum.
2. Section B is a teacher guided activity on Geometry of 2D shapes. This section is marked using a memorandum.
3. Section C is an individual learner activity and is marked using a rubric.

Section A

This section consists of questions on Straight line geometry.

THIS IS A TEACHER GUIDED SECTION

1. **Three lines are drawn in the diagram below. Study the diagram and then answer the questions that follow.**



1.1 What is the relationship between the lines AB and CD? Provide a reason for your answer.

_____

_____

_____**(2)**

1.2 What is the name given to line EF?

_____**(1)**

1.3 Name the types of angles formed when a transversal intersects two parallel lines.

_____

_____

_____

_____**(3)**

1.4 Use your protractor to measure each of the angles in the given pairs of angles and then indicate the relationship between the two angles in each pair.

Pair number	Angle 1	Angle 1 measure	Angle 2	Angle 2 measure	What is the relationship between the two angles ?	What is the name given to angle pair?
1	$\widehat{G1}$		$\widehat{G3}$			
2	$\widehat{G1}$		$\widehat{G4}$			
3	$\widehat{G1}$		$\widehat{H3}$			
4	$\widehat{G3}$		$\widehat{H3}$			
5	$\widehat{G3}$		$\widehat{H4}$			

(14)

[TOTAL 20]

Section B

This section consists of questions on Geometry of 2D shapes.

THIS IS A TEACHER GUIDED SECTION

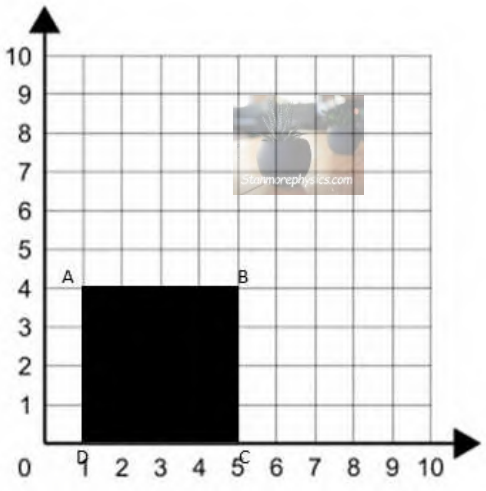
STEP ONE

For each diagram:

1. plot the given co -ordinates on the grid provided
2. join the points to create a known quadrilateral
3. colour in your diagram as per colour indicated
4. answer the questions on the quadrilateral.

EXAMPLE:

EXAMPLE	
NAME OF POINT	COORDINATES (x, y)
A	(1,4)
B	(5,4)
C	(5,0)
D	(1,0)



Colour in the quadrilateral black.

Identify quadrilateral ABCD.

ABCD is a square.

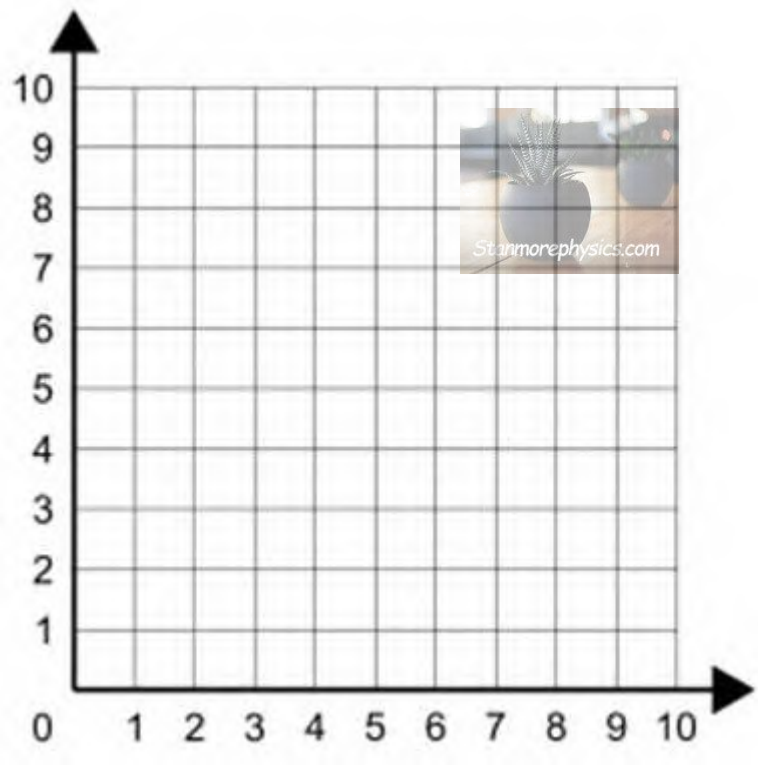
Use the diagram that you drew to provide reasons for your answer.

1. All 4 sides are equal
2. Two pairs of Opposite sides are parallel
3. All 4 interior angles are equal to 90^0

DIAGRAM ONE

The co - ordinates for this quadrilateral must be provided by the educator.

NAME OF POINT	COORDINATES (x, y)
E	
F	
G	
H	



Colour the quadrilateral red.

Identify quadrilateral EFGH.

(1)

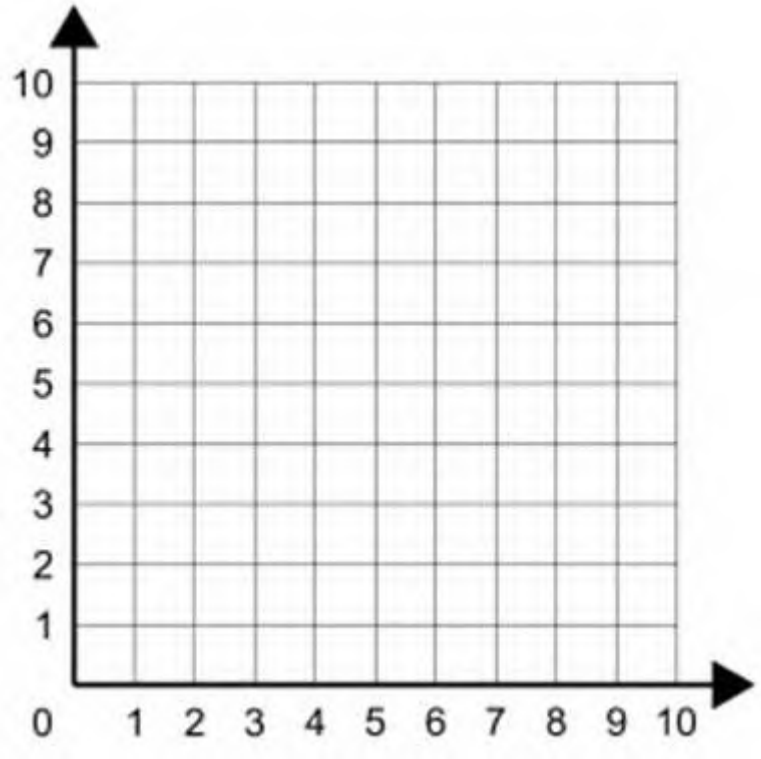
Use the diagram that you drew to provide reasons for your answer.

(3)

DIAGRAM TWO

The co - ordinates for this quadrilateral must be provided by the educator.

NAME OF POINT	COORDINATES (x, y)
I	
J	
K	
L	



Colour the quadrilateral blue.

Identify quadrilateral IJKL.

(1)

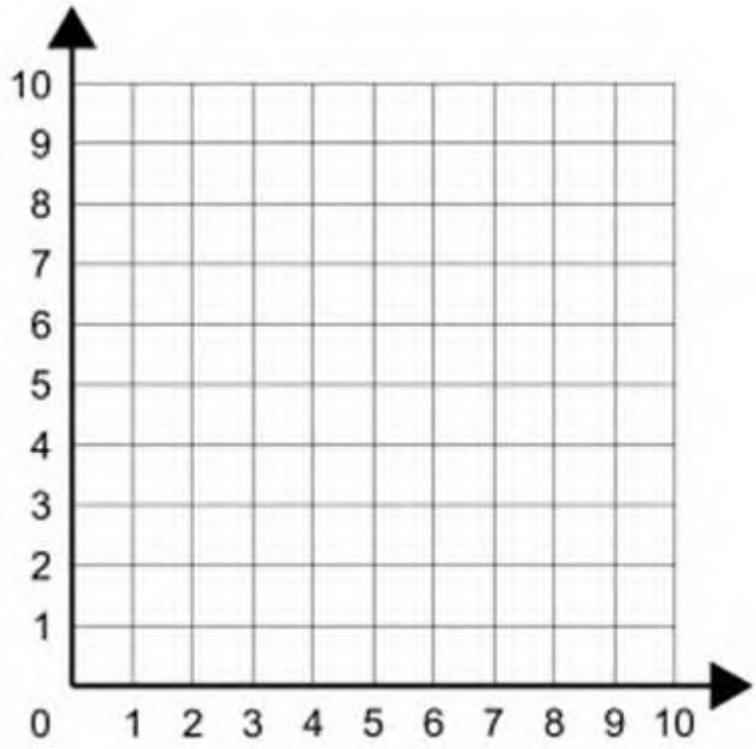
Use the diagram that you drew to provide reasons for your answer.

(3)

DIAGRAM THREE

The co - ordinates for this quadrilateral must be provided by the educator.

NAME OF POINT	COORDINATES (x, y)
M	
N	
O	
P	



Colour the quadrilateral green.

Identify quadrilateral MNOP.

(1)

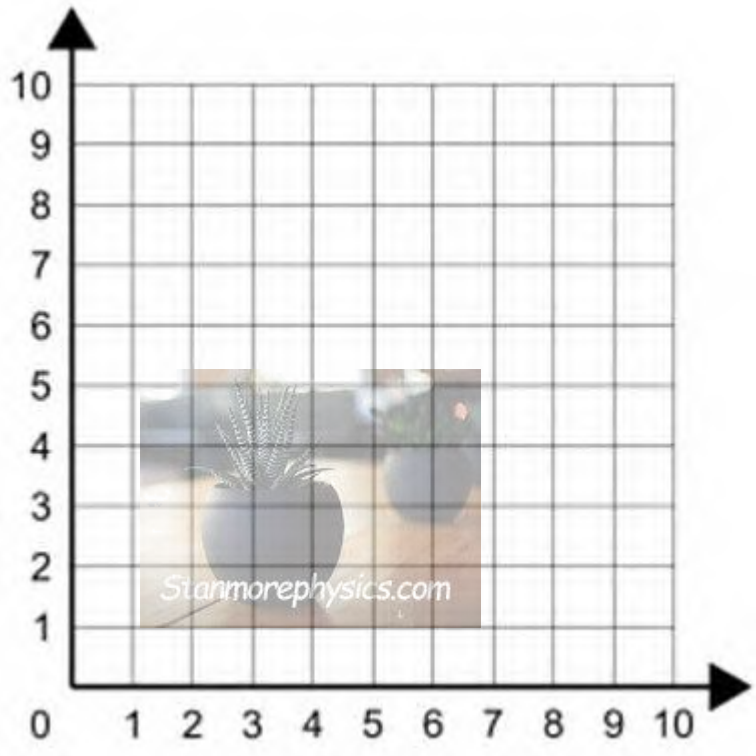
Use the diagram that you drew to provide reasons for your answer.

(3)

DIAGRAM FOUR

The co - ordinates for this quadrilateral must be provided by the educator.

NAME OF POINT	COORDINATES (x, y)
Q	
R	
S	
T	



Colour the quadrilateral yellow.

Identify quadrilateral QRST.

(1)

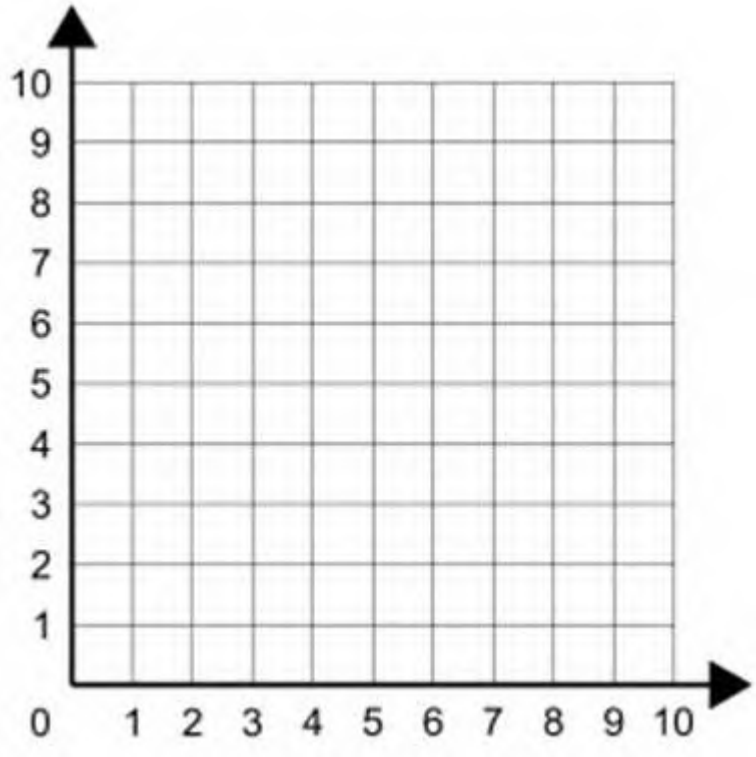
Use the diagram that you drew to provide reasons for your answer.

(3)

DIAGRAM FIVE

The co - ordinates for this quadrilateral must be provided by the educator.

NAME OF POINT	COORDINATES (x, y)
U	
V	
W	
X	



Colour the quadrilateral black.

Identify quadrilateral UVWX.

(1)

Use the diagram that you drew to provide reasons for your answer.

(3)

[TOTAL 20]

Section C

INSTRUCTIONS

1. Appearance

- The project must be done on A3 paper .
- It must be drawn neatly and in colour.
- Neatly print your name in the top right corner of the project.
- You may add detail as long as it does not interfere with the requirements or the appearance of the map.
- Make use of the different 2d shapes that you have learnt about to construct the buildings.
- Remember to be creative.
- Your project must be unique to you.

2. Drawing the Streets

- At the top left corner of the poster, indicate the name of your residential area and indicate the number of houses in the residential area.
- Draw three (3) streets that are parallel to each other. Each street should be named for reference.
- Draw Two (2) transversal streets. (i.e., Two streets that intersect all three of the above parallel streets). These should be named as well. **Do *not* make the transversals parallel to each other!!!**
- Draw Traffic lights or stop signs at four (4) different intersections.

3. Adding the Buildings

1. Your map must include the following buildings.
   a. Spaza shop
   b. School
   c. Post office
   d. Police station
   e. Bank
   f. Library
   c. Petrol station
   d. Your own house
   e. Place of prayer (Church, Temple, Mosque, etc)
2. Ensure that your buildings are drawn according to the type of quadrilaterals and 2D shapes that you have learnt about.

3. Appropriate building names must be placed on "signs" on or near the building.

4. Location of the Buildings

The buildings must be placed in the following locations.

1. Your house and the school at alternate angles.
2. The post office and the bank at co - interior angles.
3. The Church and police station at corresponding angles.
4. The library and post office at *vertically* opposite angles.
5. The Petrol station and Spaza shop at supplementary angles.
6. The Place of prayer and Your house at corresponding angles.

5. Including a Park

In the lower left corner of your residential map, you will create a park.
The park must meet the following criteria:

- The park is a square (side = 10cm)
- Within this square draw a round sandbox with a 4cm diameter.
- Draw a rectangular swimming pool that has a length of 4cm and breadth of 2cm.
- Draw a pond with a radius of 2cm.
- Finally, draw a right scalene triangle for the picnic area.

6. Additions

- You must add 5 (five) other items to your map.
- Some possibilities are, slide and swings for the park, picnic tables in the picnic area of your park, extra roads, people, trees/plants, cars and trucks on the roads, traffic signs, a railroad, a bus station, a river, etc

(20)

Well done! … you're reached the end!

Total : 60

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PROJECT MEMORANDUM		
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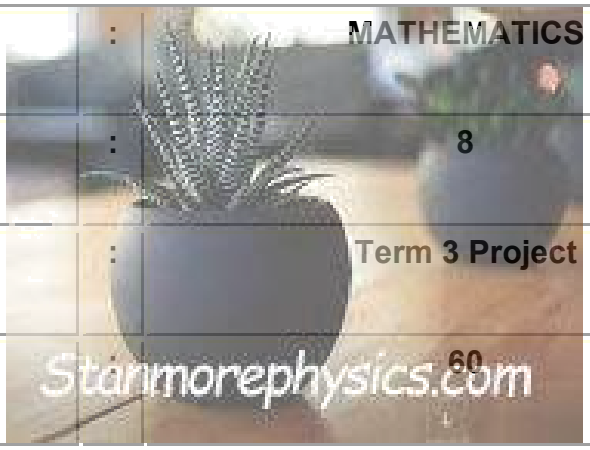
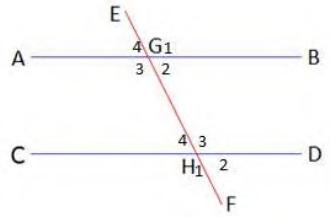


Question number	1	2	3	Total
Total marks	20	20	20	60
Learner marks				
Moderated marks				

Section A

This section consists of questions on Straight line geometry.



1.1 What is the relationship between the lines AB and CD? Provide a reason for your answer.

The distance between the two lines are the same throughout the length of the two lines✓. The lines are parallel✓ (2)

1.2 What is the name given to line EF?

Transversal✓ (1)

1.3 Corresponding angles✓, co interior angles✓, alternate angles✓ (3)

Accept (vertically opposite angles, supplementary angles, complementary angles)

1.4 Use your protractor to measure each of the angles in the given pairs of angles and then indicate the relationship between the two angles in each pair.

Pair number	Angle 1	Angle 1 measure	Angle 2	Angle 2 measure	What is the relationship between the two angles ?	What is the name given to angle pair?
1	$\widehat{G1}$	All correct measures✓✓(2)	$\widehat{G3}$	All correct measures✓✓(2)	$\widehat{G1} = \widehat{G3}$✓(1)	Vertically opposite angles✓(1)
2	$\widehat{G1}$	One or two incorrect measures✓(1) More than two incorrect measures (0)	$\widehat{G4}$	One or two incorrect measures✓(1) More than two incorrect measures (0)	$\widehat{G1} = 180^0 - \widehat{G4}$✓(1) Or $\widehat{G4} = 180^0 - \widehat{G1}$✓(1) Or $\widehat{G1} + \widehat{G4} = 180^0$✓(1)	Supplementary angles✓(1)
3	$\widehat{G1}$		$\widehat{H3}$		$\widehat{G1} = \widehat{H3}$✓(1)	Corresponding angles✓(1)
4	$\widehat{G3}$		$\widehat{H3}$		$\widehat{G3} = \widehat{H3}$✓(1)	Alternate angles✓(1)
5	$\widehat{G3}$		$\widehat{H4}$		$\widehat{G3} = 180^0 - \widehat{H4}$✓(1) Or $\widehat{H4} = 180^0 - \widehat{G3}$✓(1) Or $\widehat{G3} + \widehat{H4} = 180^0$✓(1)	Co interior angles✓(1)

(14)

[TOTAL 20]

Section B

1 x mark for identifying the quadrilateral

1 x mark per property (accept any 3 properties per quadrilateral)

Name of quadrilateral	Properties
Rectangle	• Both pairs of opposite sides parallel • Both pairs of opposite sides equal in length • All interior angles equal to 90° • Two lines of symmetry • The diagonals bisect each other and is equal in length
Parallelogram	• Both pairs of opposite sides parallel • Both pairs of opposite sides equal in length • Both pairs of opposite interior angles equal in size • No lines of symmetry • The diagonals bisect each other • • The diagonals are not equal in length
Rhombus	• Both pairs of opposite sides parallel • All sides equal in length • Both pairs of opposite interior angles equal in size • Two lines of symmetry • The diagonals bisect each other perpendicularly • The diagonals bisect the interior opposite corner angles
Kite	• Two pairs of adjacent sides equal in length • One pair of opposite angles equal to each other where the short side meets the longer side • One line of symmetry • The long diagonal bisect the short diagonal perpendicularly • The diagonals bisect the interior opposite corner angles only where the adjacent sides meet
Trapezium	• the sum of all the four interior angles of the trapezium is equal to 360° • A trapezium has two parallel sides and two non-parallel sides. • The diagonals of regular trapezium bisect each other. • No lines of symmetry

[TOTAL 20]

MARK ALLOCATION	QUESTION CRITERIA (SECTION C)			
	Appearance (5)	**Drawing the Streets (5)**	**Buildings (5)**	**Park and additions (5)**
0	Not done.	Not done.	Not done.	Not done.
1	The incorrect page size is used (less than A3), incorrect road lines are drawn , no buildings and additions, no colour or decoration. Work is untidy.	Incorrect lines drawn. Traffic lights or stop signs are not drawn . No streets are named.	Less than 5 buildings are correctly positioned as per angle relationship. Building names have not been included. 2d shapes were not used to construct the buildings.	Park has been included but dimensions and the location is incorrect. Two or More of the following are not included : The sandbox The swimming pool The pond The picnic area Less than 3 additional items were included on the poster.
2	The incorrect page size is used (less than A3),or roads are drawn with a few mistakes , a few buildings have been included. Work is untidy.	Lines are drawn but incorrectly, no transversals drawn, an attempt was made to include traffic lights or stops but at incorrect positions. No streets are named.	More than 5 buildings are correctly positioned as per angle relationship. Building names have not been included. Some 2d shapes were used to construct the buildings.	Park has been included but either the dimensions or the location is incorrect. All of the following are included but the incorrect dimensions are used : The sandbox The swimming pool The pond The picnic area Less than 3 additional items were included on the poster.
3	The correct page size is used (A3) but lines and points are not clear and buildings are incorrectly constructed and untidy .	Either the parallel lines are correctly drawn as streets or the transversals are correctly drawn as streets. Traffic lights or stop signs are drawn in the correct positions. No streets are named.	All 9 buildings are correctly positioned as per angle relationship. Buildings have not been named. Some 2 d shapes were used to construct the buildings.	Park has been included with the correct dimensions and in the correct location. All of the following are included but the incorrect dimensions are used for a few : The sandbox The swimming pool

				The pond The picnic area Less than 3 additional items were included on the poster.
4	The correct page size is used (A3). The buildings are correctly constructed and coloured ,but work is untidy , there is no organisation , lines and points are not clear , the images and additions are not coloured or decorated.	Less than three parallel lines are correctly drawn as streets or less than two transversals are correctly drawn as streets. The transversals are not parallel to each other. Traffic lights or stop signs are drawn at less than 4 different intersections. Some streets are named.	All 9 buildings are correctly positioned as per angle relationship. Buildings have been named. Some 2 d shapes were used to construct the buildings.	Park has been included with the correct dimensions and in the correct location. All of the following are included with the correct dimensions for all: The sandbox The swimming pool The pond The picnic area Less than 4 additional items were included on the poster.
5	The correct page size is used (A3). The buildings are correctly constructed and coloured, work is neat , well organized , lines and points are clear and all images and additions are coloured or decorated.	Three parallel lines are correctly drawn as streets, two transversals are correctly drawn as streets. The transversals are not parallel to each other. Traffic lights or stop signs are drawn at 4 different intersections. All streets are named.	All 9 buildings are correctly positioned as per angle relationship. Building names have been named and neatly included on or near the buildings. The buildings were constructed using different 2d shapes.	Park with correct measurements is included in the correct location on the poster. The sandbox with correct dimensions has been drawn. The swimming pool with the correct dimensions has been drawn The pond with the correct radius is included. The picnic area has been drawn with the correct triangle. 5 additional items were included on the poster.
LEARNERS' MARK 20				