MPM 2D1 Quest on Analytic Geometry Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |
| --- | --- | --- |
| Knowledge | Application | TIPS |
| $$^{}/\_{12}$$ | $$^{}/\_{21}$$ | $$^{}/\_{10}$$ |

***Knowledge:***

1. Given the points then determine the following:
2. the slope of the line passing through . \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

[2]

1. the slope of the line perpendicular to the line segment .

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

[2]

1. the midpoint of the line segment . \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

[2]

d) the exact length of the line segment . \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

[2]

1. Determine the equation of the line in **standard form** that is **perpendicular** to the line  and passes through the point.

[4]

***Application:***

1. The point $F(3,-9)$ is the midpoint of the line segment JK. If endpoint J is located at $(x,2)$ and K is located at $(17,y)$, find the value of the missing coordinates.

[4]

1. On the grid below, draw triangle with vertices  Draw a labelled diagram of the median from . Determine algebraically the length of the median from 

[4]

1. On the grid below, draw triangle$ TRW$ with vertices  . Draw a labelled diagram of the altitude from $R to TW$. Determine algebraically the equation of the altitude.

[5]

1. The coordinates of two towns are $T\left(8,3\right) and G\left(2,-9\right).$ Plot and label the two towns on the grid below. Draw a labelled diagram of the perpendicular bisector of the line segment joining these two towns. Determine algebraically the equation of the perpendicular bisector. If the two towns have decided to build a recreation centre at $(-5,2)$ , determine if this is a good place to build. Justify your answer.

[8]

***TIPS:***

1. Determine the shortest distance from the point $Q(5,-4)$ to the line $4x-3y+18=0$. Include a fully labelled diagram. Include an algebraic solution.

[10]