MPM2DE Name: _____

Thread 3, Quiz 2 - Geometry

/K 8 /A 3

Marks

1. What is the midpoint of the line segment defined by the endpoints $P(-3, 4)$ and $Q(7, -2)$?

K 2

$$M_{PQ} = \left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$$
$$= \left(\frac{-3+7}{2}, \frac{4-2}{2}\right)$$
$$= (2, 1)$$

2. A line segment has one endpoint at $(9, 2)$ and its midpoint at $(2, -1)$. Determine the co-ordinates of the other endpoint. You must use algebra to find the answer (may not graph).

K 3

$$(2, -1) = \left(\frac{9+x}{2}, \frac{2+y}{2}\right)$$

$2 = \frac{9+x}{2}$ | $-1 = \frac{2+y}{2}$

$4 = 9+x$ | $-2 = 2+y$

$-5 = x$ | $-4 = y$

∴ the co-ordinates of the other endpoint are $(-5, -4)$.

3. A map shows a gas pipeline running straight from $A(45, 60)$ to $B(65, 40)$. How long is the section of pipeline from A to B if each unit on the map grid represents 2.5 km?

A 3

$$l_{AB} = \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$$
$$= \sqrt{(45-65)^2+(60-40)^2}$$
$$= \sqrt{(-20)^2+(20)^2}$$
$$= \sqrt{400+400}$$
$$= \sqrt{800}$$
$$= 28.28$$

28.28×2.5

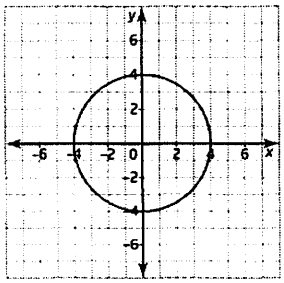
$= 70.7$ km.

∴ the pipeline is about 70.7km long.

4. Determine the equation of each circle shown.

K 1, 2

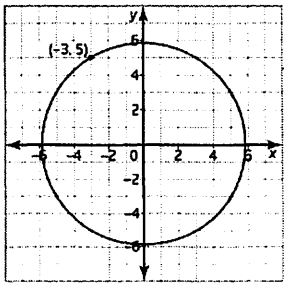
a)



$x^2 + y^2 = (4)^2$

$x^2 + y^2 = 16$

b)



$x^2 + y^2 = r^2$

$(-3)^2 + (5)^2 = r^2$

$9 + 25 = r^2$

$34 = r^2$

$x^2 + y^2 = 34$