Analytical Geometry: Distance, Midpoint and Gradient

WORKSHEET

Name: ..... Class: .....

Date: .....

MARK ____ / 37

Answer all questions. Show all your working — marks are awarded for method as well as the final answer.

1 Distance between $(1\ ;\ 1)$ and $(4\ ;\ 5)$. *(distance)* **(2)**

2 Distance between $(-2\ ;\ 1)$ and $(1\ ;\ 5)$. *(distance)* **(2)**

3 Midpoint of $(2\ ;\ 4)$ and $(6\ ;\ 10)$. *(midpoint)* **(2)**

4 Gradient of the line through $(1\ ;\ 2)$ and $(5\ ;\ 10)$. *(gradient)* **(2)**

5 Are gradients 3 and 3 parallel or perpendicular? *(parallel)* **(1)**

6 What gradient is perpendicular to gradient 2? *(perpendicular)* **(1)**

7 What gradient is perpendicular to gradient $-\frac{3}{4}$? *(perpendicular)* **(1)**

8 Are $(0\ ;\ 0)$, $(2\ ;\ 4)$, $(3\ ;\ 6)$ collinear? *(collinear)* **(3)**

9 Midpoint of $(1\ ;\ 2)$ and $(x\ ;\ 8)$ is $(4\ ;\ 5)$. Find x. *(unknown)* **(2)**

10 Distance from $(0\ ;\ 0)$ to $(x\ ;\ 12)$ is 13 $(x > 0)$. Find x. *(unknown)* **(3)**

11 P$(-1\ ;\ 1)$, Q$(3\ ;\ 3)$, R$(5\ ;\ 7)$ and S$(1\ ;\ 5)$ are the vertices of a quadrilateral. Prove that PQRS is a parallelogram. **(4)**

12 A$(0\ ;\ 0)$, B$(4\ ;\ 2)$ and C$(2\ ;\ 6)$. Show that AB $\perp$ BC. **(3)**

13 The diagonals of quadrilateral KLMN are KM and LN. K$(1\ ;\ 1)$, L$(6\ ;\ 2)$, M$(7\ ;\ 6)$, N$(2\ ;\ 5)$. Show that the diagonals bisect each other. **(3)**

14 P$(-1\ ;\ 2)$, Q$(3\ ;\ 5)$ and R$(6\ ;\ 1)$. Show that triangle PQR is right-angled at Q. **(4)**

15 ABCD is a parallelogram with A$(-2\ ;\ 0)$, B$(3\ ;\ 1)$ and C$(5\ ;\ 5)$. Find the coordinates of D. **(4)**

TOTAL: 37 marks

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