Coordinate Geometry: exam practice

10 questions · 30 marks · worked solutions and markschemes

Name _____ Date _____ Score / 30

- Answer every question before you look at the solutions. They start after the last question, with the marks for each line: M for method, A for accuracy, R for reasoning.
- Online, with more practice: ibmathrevision.com/hlai/coordinate-geometry-exam-practice

1. **2 marks · Paper 1 style · calculator allowed**

Find the gradient and the y-intercept of the line $2x + 5y = 15$.

Find both. **[2]**

2. **2 marks · Paper 1 style · calculator allowed**

Find the area of the triangle formed by the line $3x + 4y = 24$ and the coordinate axes.

Find the area. **[2]**

3. **3 marks · Paper 1 style · calculator allowed**

$A(2, 5)$ and $B(8, 1)$.

Find the equation of the perpendicular bisector of AB. **[3]**

4. **3 marks · Paper 1 style · calculator allowed**

$P(-3, 4)$ and $Q(5, -2)$.

Find the distance PQ and the midpoint of PQ. **[3]**

5. **3 marks · Paper 1 style · calculator allowed**

Find the equation of the line through $(3, -2)$ parallel to $y = 4x + 1$, and of the line through the same point perpendicular to it.

Find both equations. **[3]**

6. **3 marks · Paper 2 style · calculator allowed**

Two shops are at $S_1(1, 2)$ and $S_2(7, 6)$. Customers go to the nearer shop.

Find the equation of the boundary between the two regions. **[3]**

7. **3 marks · Paper 1 style · calculator allowed**

The points $A(1, 1)$, $B(5, 4)$ and $C(2, 8)$ form a triangle.

Show that the triangle is isosceles and right-angled at B. **[3]**

8. **3 marks · Paper 1 style · calculator allowed**

Find the point on the x-axis that is equidistant from $(2, 4)$ and $(6, 2)$.

Find the point. **[3]**

9. **4 marks · Paper 1 style · calculator allowed**

The perpendicular bisector of AB is $y = 2x - 3$. A is $(0, 1)$.

Find the coordinates of B. **[4]**

10. **4 marks · Paper 2 style · calculator allowed**

Three fire stations are at $A(0, 0)$, $B(8, 0)$ and $C(4, 6)$ (km). Fires are covered by the nearest station.

Find the point equidistant from all three stations. **[4]**

Answers and worked solutions

Question 1

2 marks

Answer: $-\frac{2}{5}$; 3

$-\frac{2}{5}$ A1

3 A1

Question 2

2 marks

Answer: 24

intercepts 8 and 6 A1

24 A1

Question 3

3 marks

Answer: $y = \frac{3}{2}x - \frac{9}{2}$

midpoint $(5, 3)$ A1

gradient $\frac{3}{2}$ A1

$y = \frac{3}{2}x - \frac{9}{2}$ A1

Question 4

3 marks

Answer: 10; $(1, 1)$

$\sqrt{64 + 36}$ M1

10 A1

$(1, 1)$ A1

Question 5

3 marks

Answer: $y = 4x - 14$; $y = -\frac{1}{4}x - \frac{5}{4}$

$y = 4x - 14$ A1

gradient $-\frac{1}{4}$ M1

$y = -\frac{1}{4}x - \frac{5}{4}$ A1

Question 6

3 marks

Answer: $y = -\frac{3}{2}x + 10$

midpoint $(4, 4)$ A1

gradient $-\frac{3}{2}$ A1

$y = -\frac{3}{2}x + 10$ A1

Question 7

3 marks

Answer: a proof: the worked solution above is the full answer

$AB = 5$, $BC = 5$ A1

gradients $\frac{3}{4}$ and $-\frac{4}{3}$ A1

product -1, so right angle at B R1 AG

Question 8

3 marks

Answer: $(2.5,\ 0)$

$(x - 2)^2 + 16 = (x - 6)^2 + 4$ M1

$8x = 20$ A1

$(2.5,\ 0)$ A1

Question 9

4 marks

Answer: $(3.2,\ -0.6)$

AB has gradient $-\frac{1}{2}$:

$y = -\frac{1}{2}x + 1$ A1

meets bisector at $(1.6,\ 0.2)$ $M1$ A1

$B(3.2,\ -0.6)$ A1

Question 10

4 marks

Answer: $\left(4,\ \frac{5}{3}\right)$

bisector of AB: $x = 4$ A1

bisector of AC:

$y - 3 = -\frac{2}{3}(x - 2)$ A1

solve M1

$\left(4,\ \frac{5}{3}\right)$ A1

Every solution is also on ibmathrevision.com/hlai/coordinate-geometry-exam-practice
Our own original questions, written and checked by IB Math Revision. IB Math Revision is independent and is not affiliated with, endorsed by or connected to the International Baccalaureate Organization. This work/product/service has been developed independently from and is not endorsed by the International Baccalaureate Organization. International Baccalaureate, Baccalauréat International, Bachillerato Internacional and IB are registered trademarks owned by the International Baccalaureate Organization.