JRA Tutors
Private tuition and small online Study Pods

Vectors

Grade 5 topic · Foundation and Higher · Edexcel and AQA

How to use this pack
20 questions that get harder as you go. Foundation students: aim for Questions 1–15 (44 marks) and have a go at the rest. Higher students: complete all 20. Show your working on the lines and write your final answer on the answer line, then mark yourself with the answers at the back. Diagrams are not drawn accurately. Total: 67 marks.

Warm-up

1 a = (−3, 4) and b = (4, 3). Work out a + b. **[2 marks]**

Answer _____

2 a = (3, 3) and b = (1, 2). Work out a − b. **[2 marks]**

Answer _____

3 a = (−1, 5). Work out 2a. **[2 marks]**

Answer _____

4 a = (4, 4) and b = (−2, 5). Work out 2a + b. **[3 marks]**

Answer _____

5 b = (0, 0). Write down −b. **[1 mark]**

Answer _____

Core

6 A is the point (2, 1) and B is the point (6, 4). Write AB as a column vector. **[2 marks]**

Answer _____

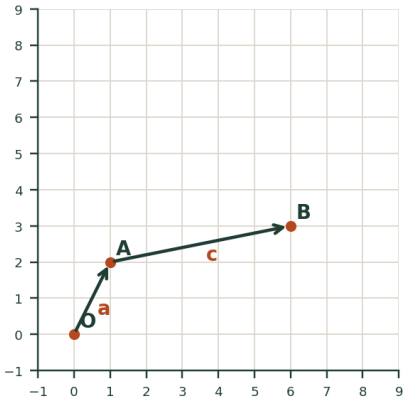
7 a = (0, 0). Work out the magnitude of a to 3 s.f. **[3 marks]**

Answer _____

8 Work out the vector from (2, 1) to (6, 3) and its length to 3 s.f. **[4 marks]**

Answer _____

9 OA = a. The diagram shows O, A and B with AB = c. Write OB in terms of a and c. **[3 marks]**



Answer _____

10 M is the midpoint of AB where A is (1, 0) and B is (6, 4). Write the position vector of M. **[3 marks]**

Answer _____

Stretch

11 OABC is a parallelogram. OA = a and OC = c. Write down AB, OB and AC in terms of a and c. **[4 marks]**

Answer _____

12 OAB is a triangle with OA = a and OB = b. Write AB in terms of a and b. **[3 marks]**

Answer _____

13 OAB is a triangle with OA = a and OB = b. M is the midpoint of AB. Write OM in terms of a and b. **[4 marks]**

Answer _____

14 OA = a and OB = b. P is on AB with AP : PB = 1 : 2. Write OP in terms of a and b. **[5 marks]**

Answer _____

15 a = (1, −2) and b = (−2, −1). Work out a − 2b. **[3 marks]**

Answer _____

Challenge

16 OA = a and OB = b. P is on AB with AP : PB = 2 : 3. Write OP in terms of a and b. **[5 marks]**

Answer _____

17 OABC is a parallelogram with OA = a and OC = c. M is the midpoint of AB. Write OM in terms of a and c. **[5 marks]**

Answer _____

18 a = (4, 2) and b = (3, 1). Find the vector 3a − 2b, then its magnitude to 3 s.f. **[5 marks]**

Answer _____

19 Show that the vectors (2, 3) and (6, 9) are parallel. **[3 marks]**

Answer _____

20 OA = a, OB = b. M is the midpoint of OA and N is the midpoint of OB. Show that MN is parallel to AB. **[5 marks]**

Answer _____