

Essential Skills 30

The skills in this series of worksheets appear frequently.

These are the GIFTS you must take to succeed

Angle between Vectors

Calculate the angle between each pair of vectors:

1. $\underline{u} = \underline{i} + 2\underline{j} + 3\underline{k}$ and $\underline{v} = 4\underline{i} + \underline{j} + 5\underline{k}$

2. $\underline{u} = 4\underline{i} + 2\underline{k}$ and $\underline{v} = -2\underline{i} + 2\underline{j} + 2\underline{k}$

3. $\underline{u} = 3\underline{i} - 2\underline{j} + \underline{k}$ and $\underline{v} = 5\underline{j} - \underline{k}$

4. $\underline{u} = \underline{i} + \underline{j} + \underline{k}$ and $\underline{v} = \underline{i} + 2\underline{j} - 2\underline{k}$

5. $\underline{u} = 2\underline{i} + 3\underline{j}$ and $\underline{v} = -\underline{i} + 2\underline{j} + \underline{k}$

6. $\underline{u} = 3\underline{i} + \underline{k}$ and $\underline{v} = 2\underline{i} + 2\underline{j} - 7\underline{k}$

7. $\underline{u} = 5\underline{i} + \underline{j} - \underline{k}$ and $\underline{v} = 2\underline{i} - \underline{j} + 2\underline{k}$

8. $\underline{u} = 2\underline{j} - 6\underline{k}$ and $\underline{v} = 3\underline{i} - 2\underline{j} + 2\underline{k}$

9. $\underline{u} = 7\underline{i} + \underline{j} - \underline{k}$ and $\underline{v} = 2\underline{i} - \underline{j} + 3\underline{k}$

10. $\underline{u} = \underline{i} - 7\underline{j}$ and $\underline{v} = \underline{i} + 4\underline{j} + \underline{k}$



APPLYING QUESTION

- (a) C divides the line joining A (2, 1, -1) and B (8, 4, 8) in the ratio 2:1.
Find the coordinates of C.
- (b) D has coordinates (9, -3, 11) and C divides \overline{DE} in the ratio 3:1
Find the coordinates of E.
- (c) Hence, calculate the size of angle BCE.