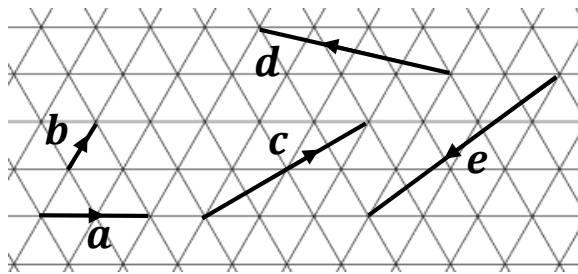




Timester Challenge

Vectors

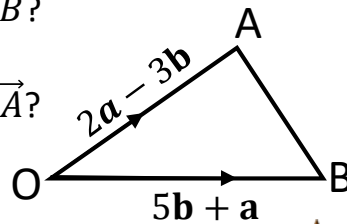


Vectors a, b, c, d and e are shown on the grid. Write each of the vectors c, d and e in terms of a and/or b .

$c =$ _____
 $d =$ _____
 $e =$ _____

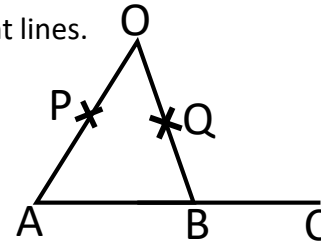
Bronze ★

- 1) What is the vector \overrightarrow{AB} ?
- 2) What is the vector \overrightarrow{BA} ?



Bronze ★

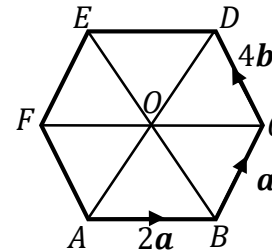
OPA, OQB and ABC are straight lines.
 P is the midpoint of OA.
 Q is the midpoint of OB.
 B is the midpoint of AC.
 $\overrightarrow{OA} = 4a, \overrightarrow{OB} = 6b$



- 1) Write the vector \overrightarrow{OP}
- 2) Write the vector \overrightarrow{AC}
- 3) Write the vector \overrightarrow{QC}

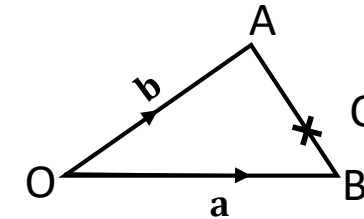
Silver ★

ABCDEF is a regular hexagon, with centre O.



- a) Write the vector \overrightarrow{AD}
- b) Write the vector \overrightarrow{AO}
- c) Write the vector \overrightarrow{OC}

Silver ★



OAB is a triangle.

- a) Find \overrightarrow{AB} in terms of a and b .

C is the point on AB such that $AC:CB = 3:2$.

- b) Find \overrightarrow{OC} in terms of a and b .
 Give your answer in its simplest form.

Gold ★

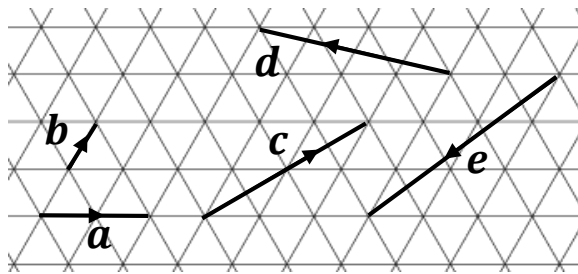


Timester Challenge

Vectors



Answers



Vectors a, b, c, d and e are shown on the grid. Write each of the vectors c, d and e in terms of a and/or b .

$$c = \underline{a + 2b}$$

$$d = \underline{-2a + b}$$

$$e = \underline{-a - 3b}$$

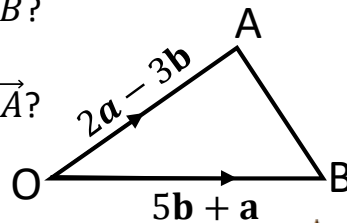
Bronze ★

1) What is the vector \overrightarrow{AB} ?

$$3a + 2b$$

2) What is the vector \overrightarrow{BA} ?

$$-3a - 2b$$



Bronze ★

OPA, OQB and ABC are straight lines.

P is the midpoint of OA.

Q is the midpoint of OB.

B is the midpoint of AC.

$$\overrightarrow{OA} = 4a, \overrightarrow{OB} = 6b$$

1) Write the vector \overrightarrow{OP}

$$2a$$

$$\overrightarrow{AB} = -4a + 6b$$

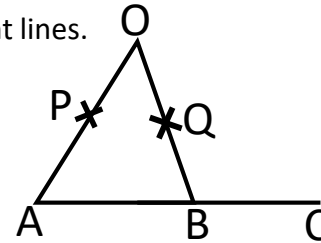
2) Write the vector \overrightarrow{AC}

$$\overrightarrow{AC} = -8a + 12b$$

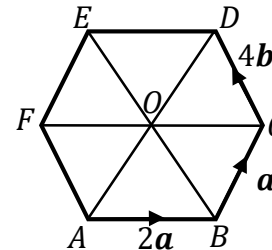
Write the vector \overrightarrow{QC}

$$\overrightarrow{QC} = 3b - 4a + 6b = 9b - 4a$$

Silver ★



ABCDEF is a regular hexagon, with centre O.



a) Write the vector \overrightarrow{AD}

$$\overrightarrow{AD} = 3a + 4b$$

b) Write the vector \overrightarrow{AO}

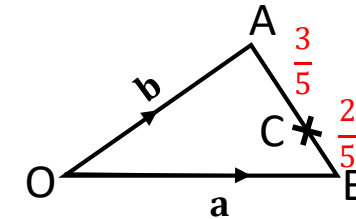
$$\overrightarrow{AO} = \frac{3}{2}a + 2b$$

c) Write the vector \overrightarrow{OC}

$$\overrightarrow{OC} = \frac{3}{2}a - 2b$$

$$\overrightarrow{FC} = -4b + 2a + a = 3a - 4b$$

Silver ★



OAB is a triangle.

a) Find \overrightarrow{AB} in terms of a and b .

$$\overrightarrow{AB} = -b + a$$

C is the point on AB such that AC:CB = 3:2.

b) Find \overrightarrow{OC} in terms of a and b .

Give your answer in its simplest form.

$$\overrightarrow{OC} = \overrightarrow{OA} + \overrightarrow{AC}$$

$$= b + \frac{3}{5}(a - b)$$

$$= \frac{3}{5}a + b - \frac{3}{5}b$$

$$= \frac{3}{5}a + \frac{2}{5}b$$

Gold ★