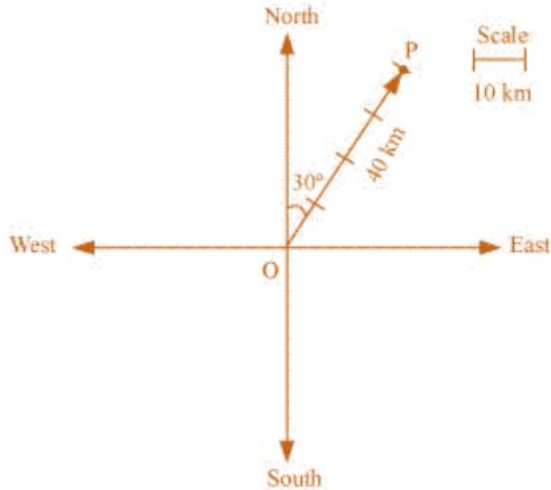


Exercise 23.1

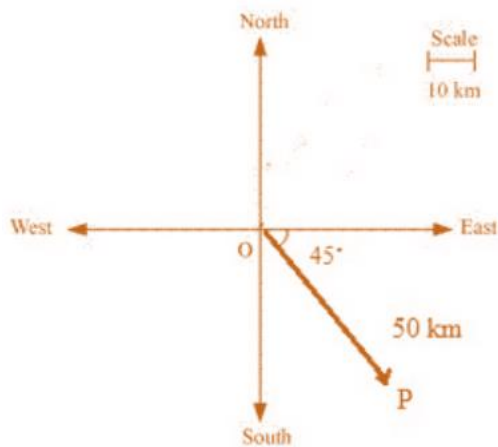
1.

(i) **Solution:**



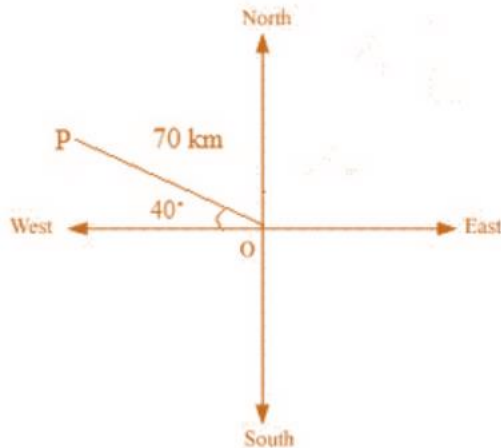
It's seen that, vector \overline{OP} represents the displacement of 40 km, 30° East of North.

(ii) **Solution:**



It's seen that, vector \overline{OP} represents the displacement of 50 km, South-East.

(iii) **Solution:**



It's seen that, vector \overline{OP} represents the displacement of 70 km, 40° North of West.

2. Solutions:

- (i) 15 kg is a scalar quantity because it involves only mass.
- (ii) 20 kg weight is vector quantity as it involves both magnitude and direction.
- (iii) 45° is a scalar quantity as it involves only magnitude.
- (iv) 10 meters south-east is a vector quantity as it involves direction.
- (v) 50 m/s^2 is a scalar quantity as it involves magnitude of acceleration.

3. Solutions:

- (i) Time period is a scalar quantity as it involves only magnitude.
- (ii) Distance is a scalar quantity as it involves only magnitude.
- (iii) Displacement is vector quantity as it involves both magnitude and direction.
- (iv) Force is a vector quantity as it involves both magnitude and direction.
- (v) Work done is a scalar quantity as it involves only magnitude.
- (vi) Velocity is a vector quantity as it involves both magnitude as well as direction.
- (vii) Acceleration is a vector quantity as it involves both magnitude as well as direction.

4. Solutions:

(i)
Collinear vectors are
 \vec{x}, \vec{z} and \vec{b}
 \vec{y}, \vec{c}
 \vec{a}, \vec{d}

(ii)
Equal vectors are
 \vec{y} and \vec{c}
 \vec{x} and \vec{b}
 \vec{a} and \vec{d}

(iii)

Co-initial vectors are

\vec{a} , \vec{y} and \vec{z}

(iv)

Collinear but not equal vectors are

\vec{b} and \vec{z}

\vec{x} and \vec{z}

5. Solutions:

(i) True. Vectors a and b are collinear.

(ii) False. Two collinear vectors are may not be equal in magnitude.

(iii) False. Zero vector may not be unique.

(iv) False. Two vectors having same magnitude may not be collinear.

(v) False. Two collinear vectors having the same magnitude may not be equal.