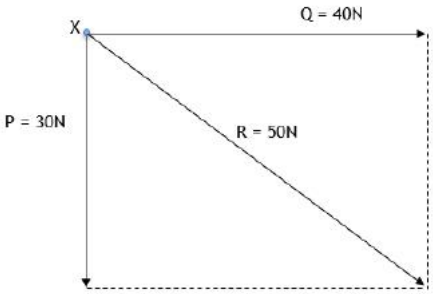
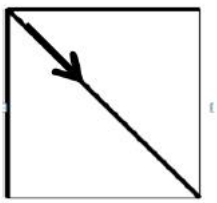
## Mark Scheme

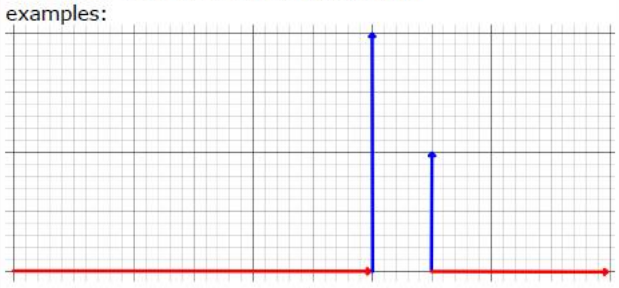
**Q1.**

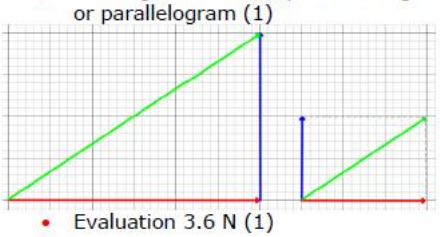
| Question number | Answer | Additional guidance | Mark |
|---|---|---|---|
| | **arrow** (any length) (labelled R) in correct direction (judge by eye) (1) | independent marks<br><br><br>construction lines need not be shown<br>arrow head must be present for MP1 | **(2)**<br>**AO1** |
| | (size of R =) 50N (1) | accept answers in range 48N to 52N obtained from scale drawing<br><br>working need not be shown | |

**Q2.**

| Question number | Answer | Additional guidance | Mark |
|---|---|---|---|
| | Scale drawing<br><br>two lines at right angles (1)<br><br>a correct scaling (for example 10kN equivalent to 1 cm) / a completed square or triangle(1)<br><br>diagonal in correct direction (1)<br><br>28 kN (1) | <br>judge by eye<br><br>accept answers from 25kN to 30 kN<br><br>accept use of Pythagoras<br><br>award full marks for correct answer without working. | **(4)** |

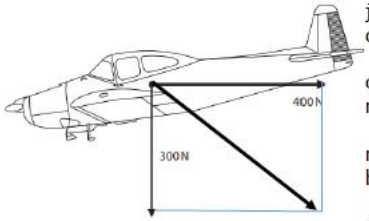
**Q3.**

| Question number | Answer | Mark |
|---|---|---|
| (i) | • two vector arrows at rights angles representing the forces (1)<br>• two vector arrows in proportion (1)<br>examples:<br> | (2) |

| Question number | Answer | Additional guidance | Mark |
|---|---|---|---|
| (ii) | • drawing shows a completed triangle or parallelogram (1)<br><br>• Evaluation 3.6 N (1) | ±0.2 N may be calculated using Pythagoras theorem | (2) |

**Q4.**

| Question Number: | Answer | Additional guidance | Mark |
|---|---|---|---|
| (i) | 0.9 (k N) (1)<br><br>up / upwards / ascending (1) | accept .9 or 0.90<br><br>north<br>N<br>↑ | (2)<br>AO 3 2a<br>AO 3 2b |

| Question Number: | Answer | Additional guidance | Mark |
|---|---|---|---|
| (ii) |  | judge length and direction by eye<br><br>construction lines need not be shown<br><br>magnitude need not be stated<br><br>allow missing arrowhead if direction and length are correct<br><br>reject answers which have any additional vectors drawn | **(1)**<br>AO 3 2b |