

Question 1

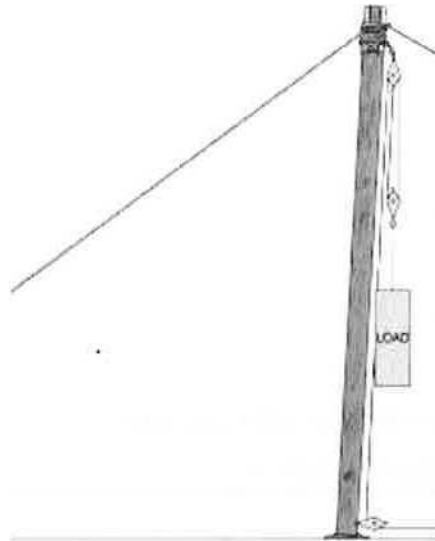
You need to set up a gin pole at the maximum recommended lean to lift a load.

The guys will be anchored at the minimum recommended distances from the foot of the pole.

The lead rope will run parallel to the pole as shown in the diagram.

The load specifics are:

- Length of pole: 8 metres
- Weight of load: 5 tonnes
- Load in lead rope: 1.3 tonnes.



Part 1: What is the minimum distance between the pole heel and the back guy anchor?

Show your workings/calculations.

Part 2: What is the maximum lean on the pole?

Show your workings/calculations.

Part 3: What is the **Total Head Load (THL)**?

Show your workings/calculations.

Part 4: What is the **compression load on the Gin Pole**?

Show your workings/calculations.

Part 5: What is the **tension in the back guy**?

Show your workings/calculations.

Part 6: What is the **diameter of the FSWR in the back guy**?

Show your workings/calculations.

Question 2

You need to set up a flying fox with the following specifications:

- The height of the two beams is 7 metres
- The span or distance between the two poles is 25 metres
- The load to be lifted weighs 3 tonnes.

Show your workings/calculations.

Part 1: What is the maximum allowable sag of the main cable?

Show your workings/calculations.

Part 2: What is the rope tension?

Show your workings/calculations.

Part 3: What is the rope diameter?

Show your workings/calculations.

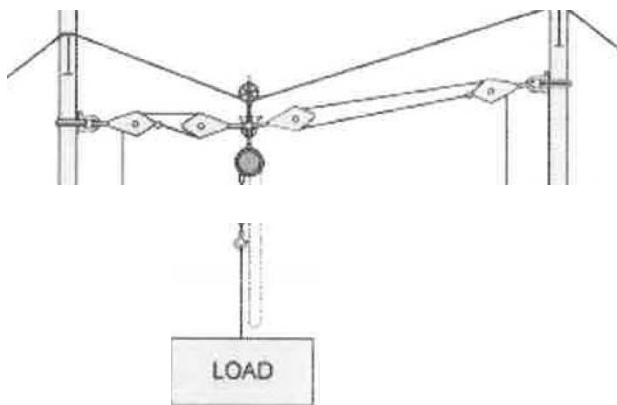
Question 3

You need to install a span rope fixed between **two** beams.

As shown in the diagram, a chain block or other lifting device will be supported from an inverted snatch block on the span rope to lift a load.

The load specifics are:

- Span between beams: 12 m
- Weight of load: 600 kg
- Weight of lifting gear and load in hauling part: 75 kg.



What is **the tension in the span rope** when the sag is at its recommended minimum?

Show your workings/calculations .

Question 4

You need to erect a suspended scaffold with a rope 50 metres long supported from a counterweighted cantilevered suspension rig.

The scaffold is an individual cradle supported from **two** needles with one suspension rope and one scaffolding hoist per needle.

The specifics are:

- The cradle has a dead load of 100 kg and a rated capacity of 250 kg.
- The needles have an outboard of 1.2 m and an inboard of 6.5 m.
- The counterweights weigh 27 kg each.
- The rope weighs 38 kg per 100 metres.
- The hoist's rated capacity is 950 kg.

Part 1: What is the maximum rope tension?

Show your workings/calculations.

Part 2: What is the minimum guaranteed breaking load of the suspension rope?

Show your workings/calculations.

Part 3: How many counterweights are needed at the inboard end of the needle?

Show your workings/calculations.

Question 5

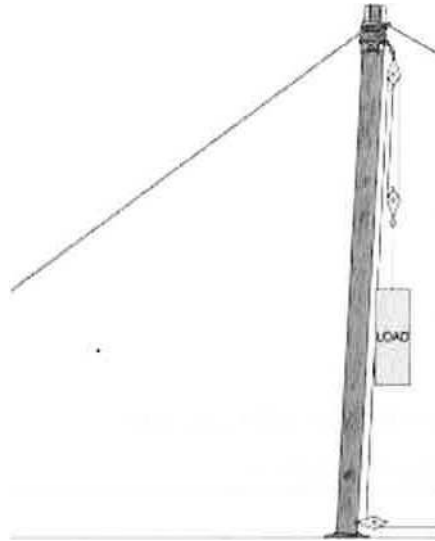
You need to set up a gin pole at the maximum recommended lean to lift a load.

The guys will be anchored at the minimum recommended distances from the foot of the pole.

The lead rope will run parallel to the pole as shown in the diagram.

The load specifics are:

- Length of pole: 10 metres
- Weight of load: 4 tonnes
- Load in lead rope: 1.5 tonnes.



Part 1: What is the minimum distance between the pole heel and the back guy anchor?

Show your workings/calculations.

Part 2: What is the maximum lean on the pole?

Show your workings/calculations.

Part 3: What is the **Total Head Load (THL)**?

Show your workings/calculations.

Part 4: What is the **compression load on the Gin Pole**?

Show your workings/calculations.

Part 5: What is the **tension in the back guy**?

Show your workings/calculations.

Part 6: What is the **diameter of the FSWR in the back guy**?

Show your workings/calculations.

Question 6

You need to set up a flying fox with the following specifications:

- The height of the two beams is 9 metres
- The span or distance between the two poles is 30 metres
- The load to be lifted weighs 3 tonnes.

Show your workings/calculations.

Part 1: What is the maximum allowable sag of the main cable?

Show your workings/calculations.

Part 2: What is the rope tension?

Show your workings/calculations.

Part 3: What is the rope diameter?

Show your workings/calculations.

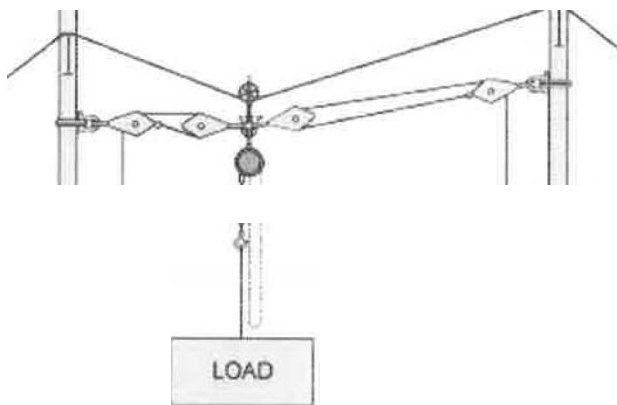
Question 7

You need to install a span rope fixed between **two** beams.

As shown in the diagram, a chain block or other lifting device will be supported from an inverted snatch block on the span rope to lift a load.

The load specifics are:

- Span between beams: 15 m
- Weight of load: 800 kg
- Weight of lifting gear and load in hauling part: 100 kg.



What is **the tension in the span rope** when the sag is at its recommended minimum?

Show your workings/calculations .

Question 8

You need to erect a suspended scaffold with a rope 100 metres long supported from a counterweighted cantilevered suspension rig.

The scaffold is an individual cradle supported from **two** needles with one suspension rope and one scaffolding hoist per needle.

The specifics are:

- The cradle has a dead load of 200 kg and a rated capacity of 500 kg.
- The needles have an outboard of 1.5 m and an inboard of 4.5 m.
- The counterweights weigh 32 kg each.
- The rope weighs 45 kg per 100 metres.
- The hoist's rated capacity is 950 kg.

Part 1: What is the maximum rope tension?

Show your workings/calculations.

Part 2: What is the minimum guaranteed breaking load of the suspension rope?

Show your workings/calculations.

Part 3: How many counterweights are needed at the inboard end of the needle?

Show your workings/calculations.

Question 9

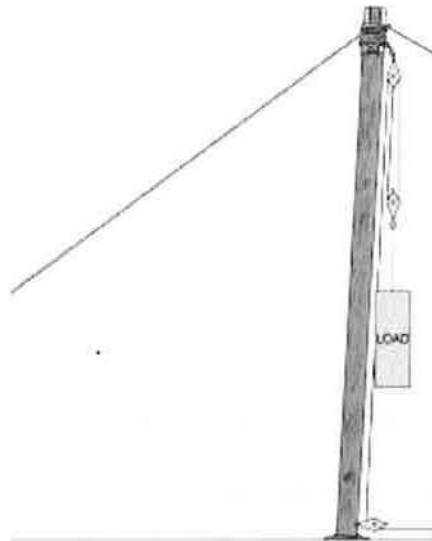
You need to set up a gin pole at the maximum recommended lean to lift a load.

The guys will be anchored at the minimum recommended distances from the foot of the pole.

The lead rope will run parallel to the pole as shown in the diagram.

The load specifics are:

- Length of pole: 8 metres
- Weight of load: 7 tonnes
- Load in lead rope: 2.2 tonnes.



Part 1: What is the minimum distance between the pole heel and the back guy anchor?

Show your workings/calculations.

Part 2: What is the maximum lean on the pole?

Show your workings/calculations.

Part 3: What is the **Total Head Load (THL)**?

Show your workings/calculations.

Part 4: What is the **compression load on the Gin Pole**?

Show your workings/calculations.

Part 5: What is the **tension in the back guy**?

Show your workings/calculations.

Part 6: What is the **diameter of the FSWR in the back guy**?

Show your workings/calculations.

Question 10

You need to set up a flying fox with the following specifications:

- The height of the two beams is 8 metres
- The span or distance between the two poles is 28 metres
- The load to be lifted weighs 2.4 tonnes.

Show your workings/calculations.

Part 1: What is the maximum allowable sag of the main cable?

Show your workings/calculations.

Part 2: What is the rope tension?

Show your workings/calculations.

Part 3: What is the rope diameter?

Show your workings/calculations.

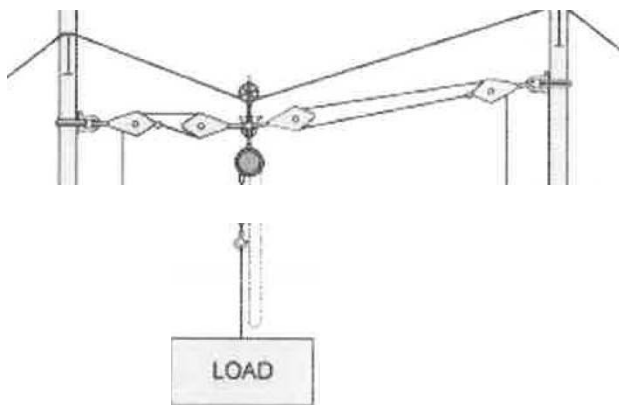
Question 11

You need to install a span rope fixed between **two** beams.

As shown in the diagram, a chain block or other lifting device will be supported from an inverted snatch block on the span rope to lift a load.

The load specifics are:

- Span between beams: 18 m
- Weight of load: 1500 kg
- Weight of lifting gear and load in hauling part: 150 kg.



What is **the tension in the span rope** when the sag is at its recommended minimum?

Show your workings/calculations .

Question 12

You need to erect a suspended scaffold with a rope 50 metres long supported from a counterweighted cantilevered suspension rig.

The scaffold is an individual cradle supported from **two** needles with one suspension rope and one scaffolding hoist per needle.

The specifics are:

- The cradle has a dead load of 100 kg and a rated capacity of 350 kg.
- The needles have an outboard of 2.5 m and an inboard of 7.5 m.
- The counterweights weigh 20 kg each.
- The rope weighs 39 kg per 100 metres.
- The hoist's rated capacity is 850 kg.

Part 1: What is the maximum rope tension?

Show your workings/calculations.

Part 2: What is the minimum guaranteed breaking load of the suspension rope?

Show your workings/calculations.

Part 3: How many counterweights are needed at the inboard end of the needle?

Show your workings/calculations.