

Name of the Student: _____

Max. Marks : 14 Marks

Time : 14 Minutes

Q1.

Figure 8 shows part of a cart.

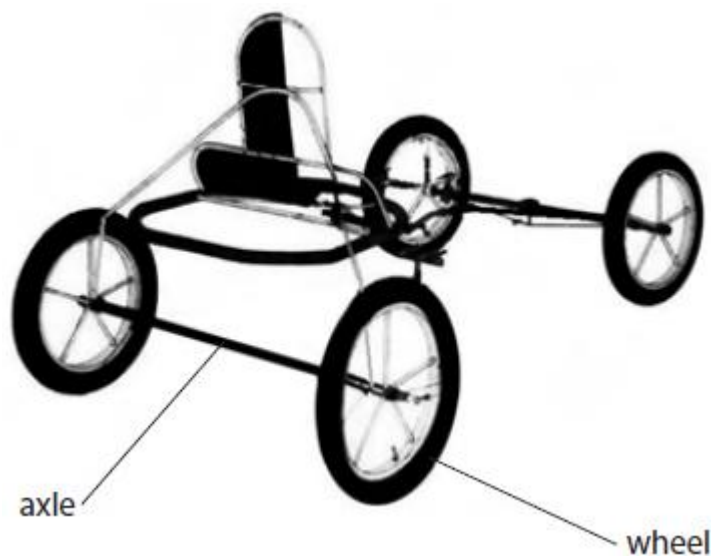


Figure 8

When the wheels turn the axles become warm.

(i) Explain why the axles become warm when the wheels turn.

(2)

.....

.....

.....

.....

(ii) Give **one** way of reducing the heating of the axles when the wheels turn.

(1)

.....

.....

(Total for question = 3 marks)

Q2.

Figure 8 shows part of a cart.

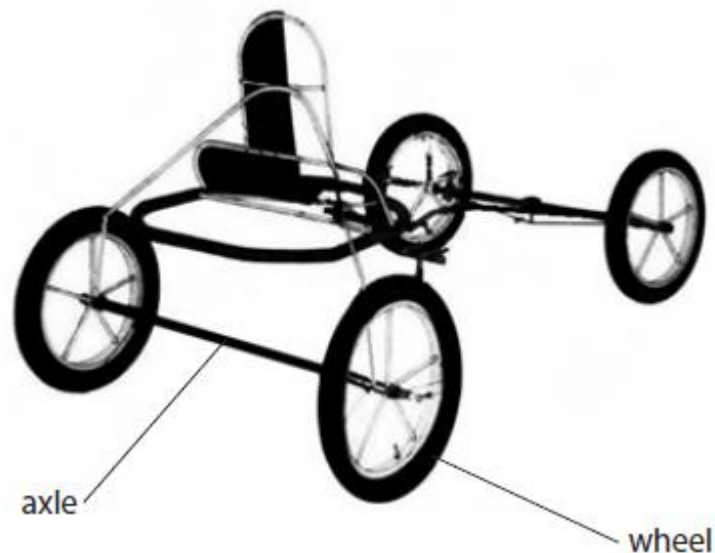


Figure 8

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(2)

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.....

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(ii) Give **one** way of reducing the heating of the axles when the wheels turn.

(1)

.....

.....

(Total for question = 3 marks)

Q3.

(i) Figure 9 shows two gears.

Gear Q moves clockwise as shown by the arrow.

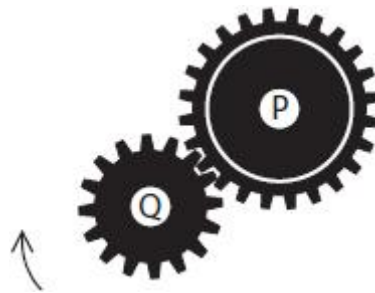


Figure 9

Which of these describes how gear P moves?

(1)

- ☐ A anticlockwise, slower than gear Q
- ☐ B anticlockwise, faster than gear Q
- ☐ C clockwise, slower than gear Q
- ☐ D clockwise, faster than gear Q

(ii) Figure 10 shows the number of teeth on the gears.

Gear P has 24 teeth, gear Q has 16 teeth.

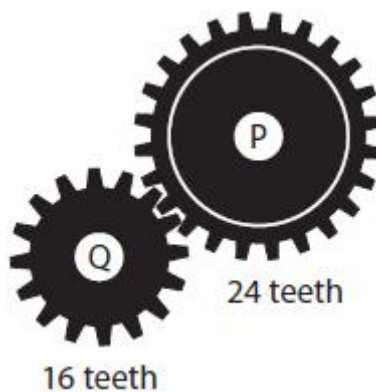


Figure 10

Which of these gives the ratio of the number of teeth on gear P to the number of teeth on gear Q?

(1)

- ☐ A $24 - 16$
- ☐ B $16 + 24$
- ☐ C $3 : 2$
- ☐ D $2 : 3$

(Total for question = 2 marks)

Q4.

A 20 cm ruler has a pivot at its centre.

The ruler is balanced when no forces act on the ruler.

Figure 4 shows two forces, Y and Z, acting on the ruler.

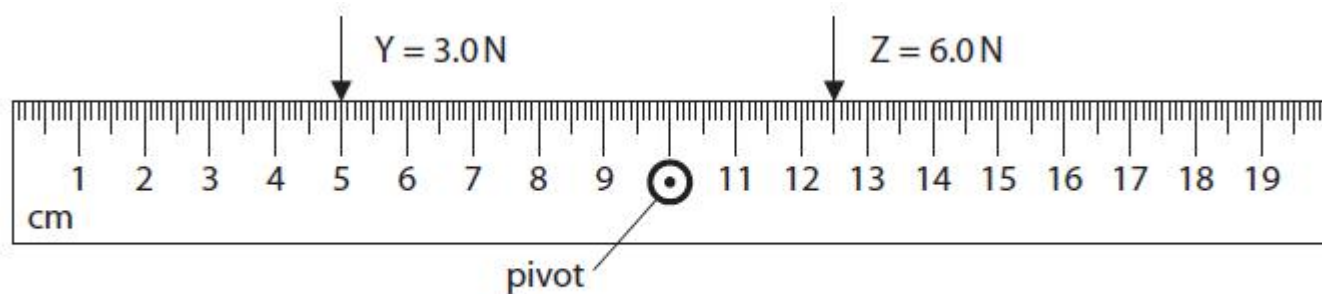


Figure 4

Use the principle of moments to show that the ruler in Figure 4 is balanced.

(2)

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(Total for question = 2 marks)

Q5.

Figure 7 shows a box at rest on a floor.

The force that the floor exerts on the box is shown by the vector in Figure 7.

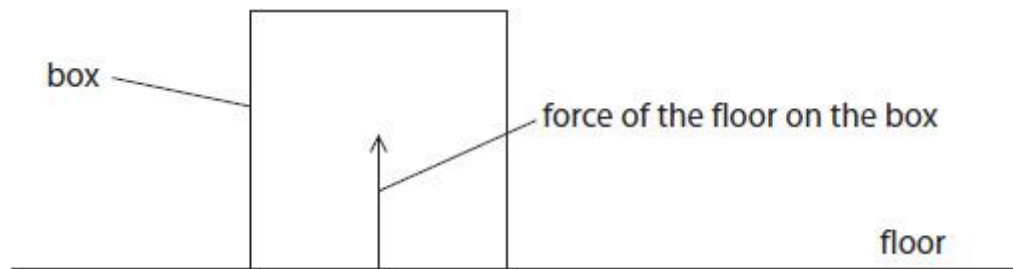


Figure 7

Add another vector to the diagram in Figure 7 to show the weight of the box.

(2)

(Total for question = 2 marks)

Q6.

Figure 7 shows a box at rest on a floor.

The force that the floor exerts on the box is shown by the vector in Figure 7.

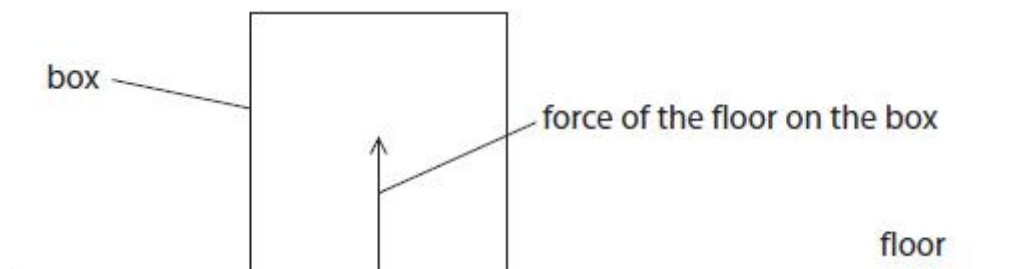


Figure 7

Add another vector to the diagram in Figure 7 to show the weight of the box.

(2)

(Total for question = 2 marks)