

Work done and energy transfer – GCSE Physics Paper 2

1. No.9

0	9
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Figure 17 shows a young child using a baby walker.

Figure 17



0	9	.	1
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The child is standing still.

What is the resultant **vertical** force on the child?

Give a reason for your answer.

[2 marks]

Resultant vertical force = _____ N

Reason _____

Use the Physics Equations Sheet to answer questions 09.2 and 09.3.

09.2

Write down the equation which links distance (s), force (F) and work done (W).

[1 mark]

09.3

The child pushed the baby walker 2.8 m across a horizontal floor.

The work done by the child was 35 J.

Calculate the horizontal force the child applied to the baby walker.

[3 marks]

Horizontal force = _____ N

09.4

The child pushed the baby walker from a carpet onto a hard floor.

The child applied the same horizontal force to the baby walker.

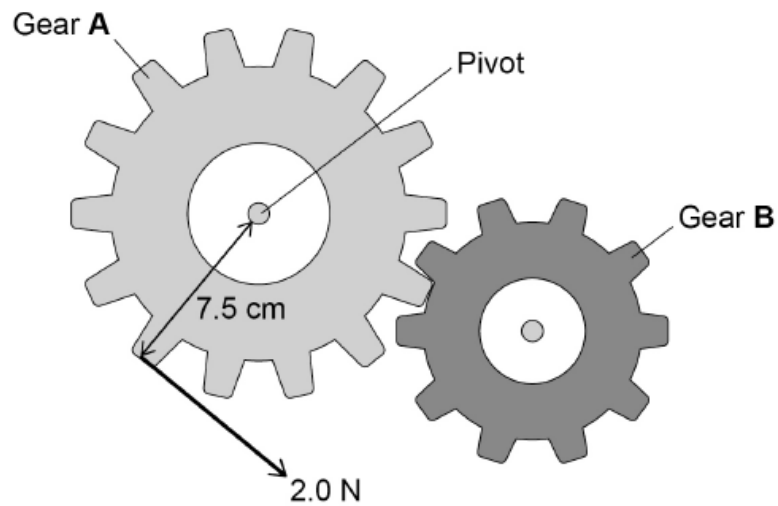
Explain why the speed of the baby walker increased.

[2 marks]

There are some toy gears on the front of the baby walker.

Figure 18 shows the gears.

Figure 18



The child applies a force to gear A.

This causes a moment about the pivot, so gear A rotates.

Use the Physics Equations Sheet to answer questions 09.5 and 09.6.

09.5

Write down the equation which links distance (d), force (F) and moment of a force (M).

[1 mark]

09.6

The child applies a force of 2.0 N on gear **A**.

The perpendicular distance between the force and the pivot is 7.5 cm.

Calculate the moment of the force about the pivot.

[3 marks]

Moment of force = _____ N m

09.7

Explain what happens to gear **B** when the child applies the force to gear **A**.

[2 marks]

2. No.2

0	2
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Figure 5 shows a young child using a baby walker.

Figure 5



0	2	.	1
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The child is standing still.

What is the resultant **vertical** force on the child?

Give a reason for your answer.

[2 marks]

Resultant vertical force = _____ N

Reason _____

Use the Physics Equations Sheet to answer questions 02.2 and 02.3.

02.2

Write down the equation which links distance (s), force (F) and work done (W).

[1 mark]

02.3

The child pushed the baby walker 2.8 m across a horizontal floor.

The work done by the child was 35 J.

Calculate the horizontal force the child applied to the baby walker.

[3 marks]

Horizontal force = _____ N

02.4

The child pushed the baby walker from a carpet onto a hard floor.

The child applied the same horizontal force to the baby walker.

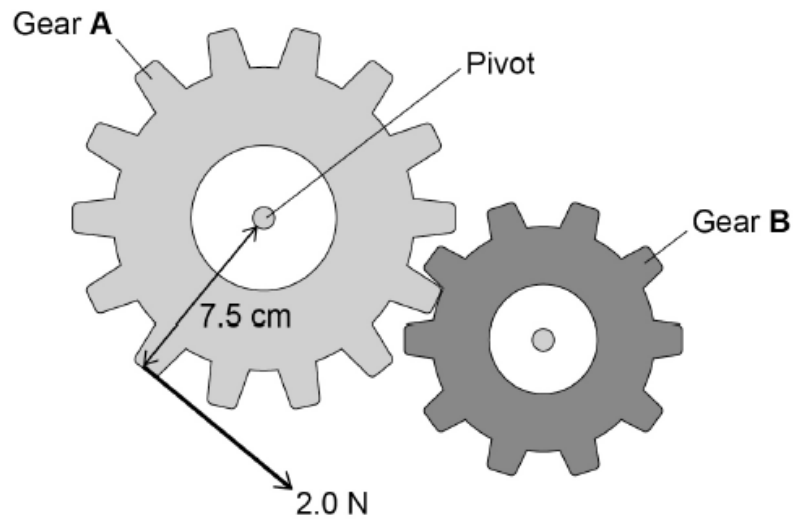
Explain why the speed of the baby walker increased.

[2 marks]

There are some toy gears on the front of the baby walker.

Figure 6 shows the gears.

Figure 6



The child applies a force to gear **A**.

This causes a moment about the pivot, so gear **A** rotates.

Use the Physics Equations Sheet to answer questions 02.5 and 02.6.

02.5

Write down the equation which links distance (d), force (F) and moment of a force (M).

[1 mark]

02.6

The child applies a force of 2.0 N on gear **A**.

The perpendicular distance between the force and the pivot is 7.5 cm.

Calculate the moment of the force about the pivot.

[3 marks]

Moment of force = _____ Nm

02.7

Explain what happens to gear **B** when the child applies the force to gear **A**.

[2 marks]
