Speed, Distance and Time

1. What is speed? Give the mathematical equation for the same.

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2. What is the speed in km/hr of someone who can run 100 metres in 10 seconds? Show your working.

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3. A lion can run at a speed of 80 km/hr.

a) How many metres could it run in 1 minute? Show your working.

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In a game park, a lion surprises a zebra and sprints after it for 15 seconds.

b) How far does the lion travel? Show your working.

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The zebra can run at 1067 metres per minute. In the 15 seconds during which the lion is chasing it, the zebra needs to reach a gap in some rocks 300 metres away where it will be safe.

c) (i) How far can the zebra travel in 15 seconds ? Show your working.

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(ii) Can the zebra reach the rocks?   ………………………………………………………………….

(iii) Explain your answer fully.

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d) What will happen to the zebra and the lion?

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4. How is reflection used in the process of finding the speed of a vehicle?

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5. What does the computer do to calculate the speed?

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6. Peter challenges three other members of his class to a one-lap race. Usen, Jamil, Sari and Eleanor stand by the start/finish line and use stopwatches to record when the runners set off and when they complete the lap.

a) State two ways in which errors may occur in recording the runners speeds.

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b) How could the recording of the runner's speed be made much more accurate?

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7. Alan, Dabir and Harum test three zip wires to find which one is the fastes. Dabir oils his trolley before he makes his trip but the others do not. Alan swings about on his journey and travels 60 metres in 1 minute, Dabir lies back so his body is vertical and travels 90 metres in 1 minute, Harum makes a star shape and travels 120 metres in 1 minute.

a) What force may be affected by oiling one trolley and not the other?

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b) What force may be affected by the position of Dabir and Harum's bodies?

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c) Show your working to calculate the speeds in km/hr of:

(i) Alan

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(ii) Dabir

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(iii) Harum

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8. Ade made the following observations on an insect. It moved 1 cm in 10 seconds, then 2 cm in the next 10 seconds, it stayed still for 10 seconds, then moved 5 cm in the next 10 seconds, it stayed still for 20 seconds, then moved 2 cm in the next 30 seconds.

a) Draw a distance time graph of the insect's movement.

b) When did the insect travel fastest?

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c) When did the insect travel slowest?

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d) How far would the insect have got in 1 minute if it had kept moving at its original speed?

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e) Ade saw the insect then moved 20 cm in 2 seconds. What do you think it did?

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