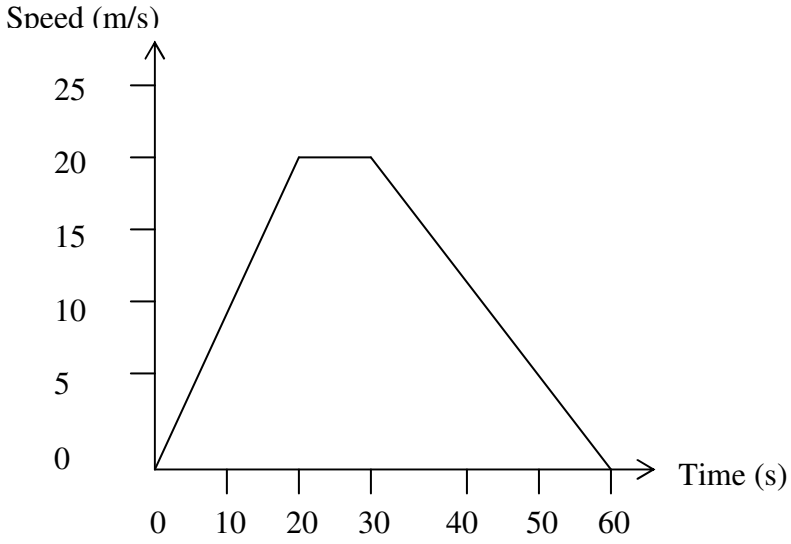
Transport revision questions

The credit questions are in ------- ***bold and italics***

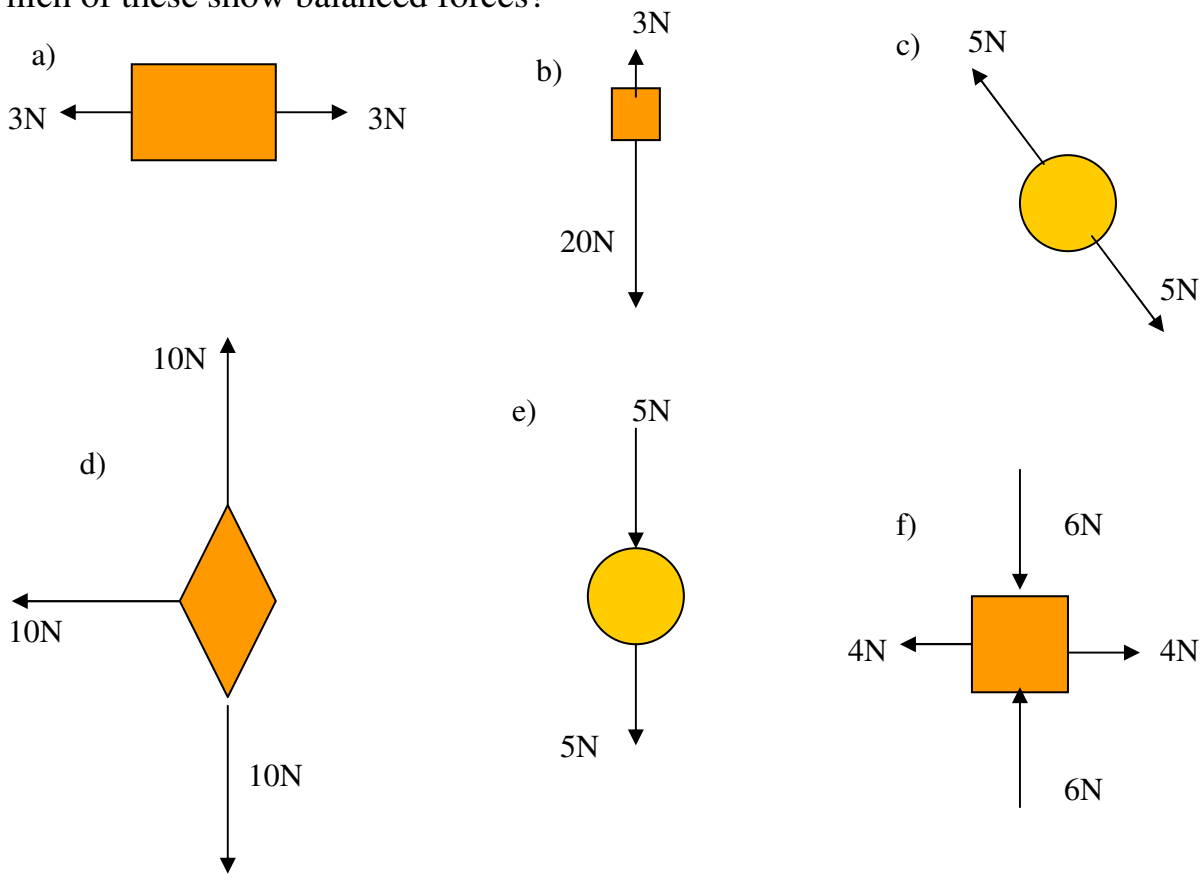
1. Explain what is meant by the word speed.
2. What is meant by the average speed of an object?
3. What are the units of average speed?
4. What is measured to find average speed?
5. A runner can cover 400m in 49.5 seconds, what is their average speed?
6. A train covers 47km in 35 minutes
   a) what is its average speed in km/h
   b) what is its average speed in m/s
7. What is meant by instantaneous speed?
8. What speed is given by the speedometer on a car?
9. Why can't instantaneous speed be measured using a stopwatch?
10. Explain what is meant by the word acceleration.
11. What has to obtained to calculate acceleration?
12. What formula is used to calculate acceleration?
13. What is the unit of acceleration?
14. A train slows down from $25ms^{-1}$ to $12ms^{-1}$ in 4 seconds, calculate its deceleration.
15. Sketch a speed time graph (with labels) for an object which speeds up.
16. Sketch a speed time graph (with labels) for an object which slows down.
17. Sketch a speed time graph (with labels) for an object which is moving with a constant speed.

For questions 18,19,20 and 21 use this sped time graph



18. Calculate the acceleration.
19. Calculate the deceleration.
20. Calculate the total distance travelled.
21. Calculate the average speed.

22. Forces can make objects do 3 things, what are they?
23. What unit is used to measure a force?
24. What are the main parts of a Newton Balance?
24. Why do you have to hold a Newton Balance by the handle?
25. What is meant by the word mass?
26. What is the unit of mass?
27. What causes weight and what is it a type of?
28. Explain what is meant by "gravitational field strength".
29. What is the earth's gravitational field strength?
30. What is the weight of 250g of gold?
31. What is friction a type of?
32. What does friction try to do?
33. Give one example of a situation where friction is made as large as possible?
34. Give one example of a situation where friction is made as small as possible?
35. What do we say about forces that are the same size but act in opposite directions?
36. Which of these show balanced forces?



37. Write down Newton's first law of motion.
38. When a car is travelling at 30ms^{-1} the engine force is 25N greater than the frictional force. What will the car do and which of Newton's laws explain this?
39. If the forces on an object are unbalanced and it mass increase what will happen to it?

40. A 10kg trolley has a force of 2N applied to it , what will be its acceleration?
41. ***What is the mass of an object if the forces acting on it are as shown in number 36(b) if accelerates at 5ms^{-2}?***
42. What are the 8 forms of energy?
43. What 2 things can not be done to energy?
44. What can be done to energy?
45. What energy transformation happens as a car is accelerating?
46. What is the energy transformation as a car rolls up a hill?
47. What is the energy transformation as a car rolls down a hill?
48. What is the energy transformation as a car brakes?
49. What other quantity has the same unit as energy?
50. What is work done a measurement of?
51. A force of 469N is required to drag a 25kg box 15m across a floor, how much work is done?
52. If it takes 15second to drag the box in number 51 across the floor what was the power?
53. If the same box was now lifted 15m how much potential energy did it gain?
54. The kinetic energy of an object depends on what 2 things?
55. ***A train of mass 30000kg increases its speed from 15ms^{-1} to 30ms^{-1}, what is its gain in kinetic energy?***
56. ***If the train is going at 30ms^{-1} and turns off its engine how high up a slope could it roll?***
57. ***The train only goes 15m up the slope, explain why.***