

GCSE Physics A (Gateway)

J249/01 Physics A P1-P4 and P9 (Foundation Tier)

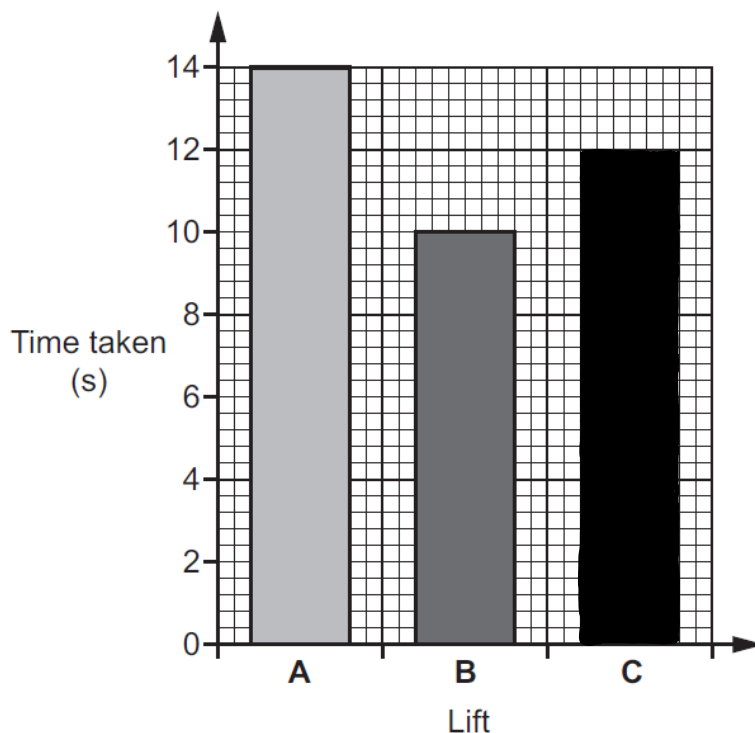
Question Set 12

1

A tall building needs a lift to move people from one floor to another.

The builder has a choice of three different lifts.

Each lift takes a different amount of time to move between the two floors. Look at a bar chart of the time taken for each lift.



- (a) (i) Lift C takes 12s to move between the two floors.

Draw a bar for lift C on the bar chart.

[1]

- (ii) Calculate the **mean** time of the three lift journeys

$$\frac{14 + 10 + 12}{3} = \frac{36}{3} = 12$$

Mean =12.....s [2]

- (iii) Explain which lift uses the most power.

Assuming the work done / energy transferred remains constant [2]
Lift B uses the most power due to the fact it takes the least time and power $\propto \frac{1}{t}$ so as time decreases, power increases.

(b) (i) One lift uses 50 000 J for a 12 s journey.

Calculate the power of the lift.

Give your answer to 1 decimal place.

$$P = \frac{E}{t} = \frac{50\,000}{12} = \frac{12500}{3} = 4166.66.$$

$$\text{Power} = \frac{4166.7}{(1 \text{ dp})} \text{ W} \quad [4]$$

(ii) When the lift is broken the stairs are used.

Calculate the work done when a 750 N person climbs a distance of 4 m.

$$Wd = F \times d$$

$$= 750 \times 4 = 3000$$

$$\text{Work done} = \frac{3000}{\dots\dots\dots} \text{ J} \quad [3]$$

Total Marks for Question Set 12: 12

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