

2.4.7 Context Graphs

Name: _____ Class: _____ Date: _____

KEY WORDS stationary

<!-- Session 2 native-skill companion -->

Objective

Practise context graphs within the labelled native lessons. Public original tasks; locally authored answer guidance.

1 Key knowledge and worked examples

■ Distance-time graphs and contextual intersections · Foundation

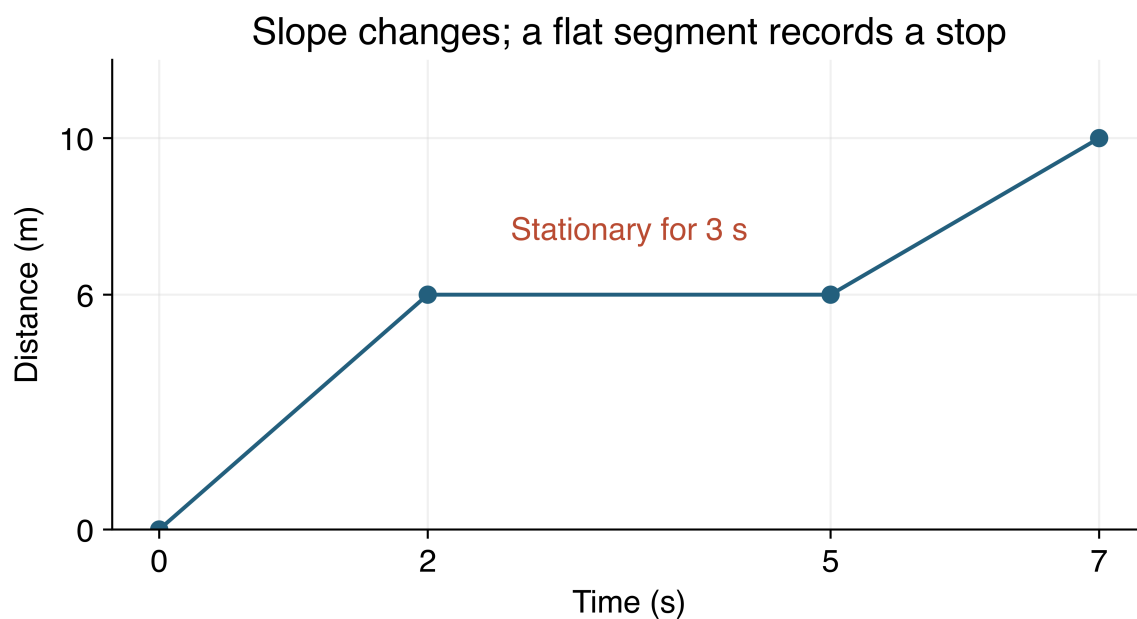
Read the axis quantities and units before interpreting shape. On a distance-time graph, slope is speed for a segment with increasing distance; a horizontal segment means no distance change. An intersection of two charge graphs gives equal costs. A curved section requires a local rather than one fixed slope.

$$v = \frac{\Delta d}{\Delta t}$$

The distance points (0,0),(2,6),(5,6),(7,10), in seconds and metres, give speed $6/2=3$ m/s for the first section, a 3-second stop, then speed $(10-6)/(7-5)=2$ m/s. Average speed for the full interval is $10/7$ m/s, including the stop. Charges $20+3x$ and $44+x$ meet at $x=12$, at cost 56. If speed increases from 0 to 10 m/s over 5 seconds, its average acceleration is $10/5=2$ m/s²; a speed-time graph measures this through its slope.

A horizontal distance graph does not mean fast motion. A graph height gives distance, while slope gives its rate. Average speed includes every elapsed interval, including waiting.

AQA A14 uses real contexts and graphical solutions. Foundation can interpret a plotted non-standard function; Higher also interprets exponential models and nonlinear graph estimates in the next lesson.



Original native-lesson illustration; labels belong to its worked example.

2 Practice

2.1 (Foundation) Find the first-segment speed.

2.2 (Foundation) Find the duration of the stop.

2.3 (Foundation) Find the final-segment speed.

3 Exam-style questions

3.1 Decide whether this claim is true. Justify with a concrete calculation or counterexample: A horizontal segment on a distance-time graph means the object is moving at its greatest speed.

Solutions

2.1 Change of distance 6 divided by elapsed time 2.

2.2 The horizontal section runs from minute 2 to minute 5.

2.3 $(10-6)/(7-5)=2$.

3.1 False. Constant distance over a positive time interval gives gradient zero and speed zero. A steeper rising segment represents greater speed.

Local review guidance: show the chosen method; give the checked result; explain the condition or failed shortcut. This is authored classroom guidance.