UNIT 17 *Using Graphs* Mental Tests

Mental Test 17.1

1. How does the transformation $y = f(x + 2)$ move the graph of $y = f(x)$?
(horizontally, 2 units to the left)

2. If $y = f(x)$ is defined on the interval [0, 1], on what interval is $y = f(2x)$ defined? $\left(\left[0, \frac{1}{2}\right]\right)$

3. How does the transformation $y = f(x) + 1$ move the graph of $y = f(x)$? (vertically, 1 unit up)

4. (a) On a grid, sketch the graph of $y = f(x)$ when $f(x) = x^2$.
(b) On the same grid, sketch the graphs of:
(i) $y = f(2x)$ (ii) $y = f\left(\frac{x}{2}\right)$ (iii) $y = f\left(\frac{1}{x}\right)$. (see below)

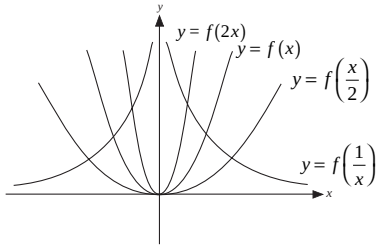
5. What does the area under a speed-time graph represent? (distance)

6. On a distance-time graph, what does the gradient represent? (speed)

7. Sketch a speed-time graph for a high speed train running non-stop between two stations. (see below)

8. If x and y are related by $y = ax^2 + b$, plotting which two variables will give a straight line?
(y and x^2)

4.



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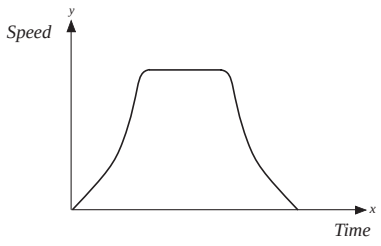


UNIT 17 Using Graphs Mental Tests

Mental Test 17.2

1. How does the transformation $y = f(x - 2)$ move the graph of $y = f(x)$?
(horizontally, 2 units to the right)

2. If $y = f(x)$ is defined on the interval [0, 1], on what interval is $y = f\left(\frac{x}{2}\right)$ defined? ([0, 2])

3. How does the transformation $y = f(x) - 1$ move the graph of $y = f(x)$?
(vertically, 1 unit down)

4. (a) On a grid, sketch the graph of $y = f(x)$ when $f(x) = x$.
(b) On the same grid, sketch the graphs of:
(i) $y = f(2x)$ (ii) $y = f\left(\frac{x}{2}\right)$ (iii) $y = f\left(\frac{1}{x}\right)$. (see below)

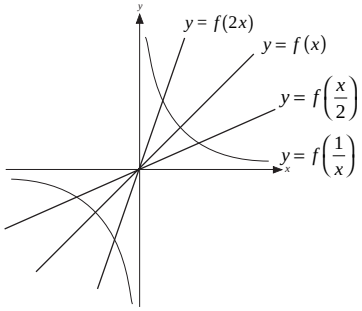
5. What does the area under an acceleration-time graph represent? (speed)

6. On a speed-time graph, what does the gradient represent? (acceleration)

7. Sketch a distance-time graph for a high speed train running non-stop between two stations. (see below)

8. If x and y are related by $y = a\sqrt{x} + b$, plotting which two variables will give a straight line?
(y and $\sqrt{x}$)

4.



6.