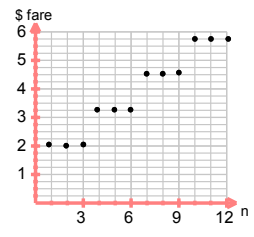


Assessment Schedule – 2011

Mathematics and Statistics: Investigate relationships between tables, equations and graphs (91028)

Evidence Statement

Question	Expected Coverage	Achievement (u)	Achievement with Merit (r)	Achievement with Excellence (t)
		<i>Investigate relationships between tables, equations and graphs.</i>	<i>Investigate relationships between tables, equations and graphs, using relational thinking.</i>	<i>Investigate relationships between tables, equations and graphs, using extended abstract thinking.</i>
ONE (a)(i)	Graph drawn from table. 	Table is linked to graph for stages and costs , (rather than stations and costs) as a straight line, $S = 3n$, but this <i>simplifies</i> the situation for Q1aii. Accept sloping lines connecting the “steps”.	Graph drawn as horizontal sets of points for stages according to multiples of three. Accept ambiguity at boundaries between fares, eg when bars “touch”.	Graph is drawn as discrete step function. Accept continuous steps and accept bars, so long as the fares are correct for each number of stations and none are ambiguous.
(ii)	Child’s fare increases smaller. Child’s fare starts at a lower value. Increase for children’s fares 3/5 of adult. Both have constant increases.	ONE aspect described. Accept consistency with the graph drawn.	TWO valid comparisons. If the comparison has been simplified by 1ai graph, maximum grade here is “u”	
(b)(i) (ii)	\$40 Rule given: $S = 40n - 200$	Correct value. Correct gradient or intercept. Accept EITHER response as evidence for “u”.	Correct equation given. <i>Consistent use of incorrect gradient in (ii) is still an error, as no grade has yet been lost” by it in part (i).</i>	
(b) (iii)	<ul style="list-style-type: none"> • 4 – 9 weeks, $S = 68n - 312$ OR The graph is steeper than before because he now saves \$68 per week • At 9 weeks, vertical jump, because of the \$50 received from Grandma. • > 9 weeks, $S = 68n - 262$ OR graph is parallel to the last one because he is still saving \$68 per week. 	Graph drawn correctly – a straight line (or line of discrete points): (4,–40) to (9,300). OR ONE qualitative comment relating to changes in the graph.	Partial description given including at least ONE quantitative comment. OR ONE equation.	Full description given including at least TWO quantitative comments. OR BOTH equations.

NØ – no response, no relevant evidence

N1 – at least one attempt at one part-question

N2 – one of u

A3 – 2 of u OR t AND u OR r AND u

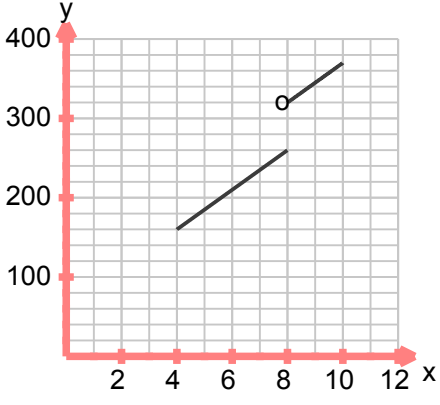
A4 – 3 of u

M5 – 1 of r AND 2 of u OR t AND 2 of u

M6 – 2 of r OR 1 of r AND 3 of u OR t AND 3 of u

E7 – 1 of t AND 1 of r

E8 – 2 of t OR 1 of t AND 2 of r

Question	Expected Coverage	Achievement	Achievement with Merit	Achievement with Excellence
		Investigate relationships between tables, equations and graphs.	Investigate relationships between tables, equations and graphs, using relational thinking.	Investigate relationships between tables, equations and graphs, using extended abstract thinking.
TWO (a)	<p>Graph drawn from table.</p> 	<p>Sketch plots points correctly for 4 – 8 hours. Accept discrete plot.</p> <p>Accept the two continuous plots for: 4-8 hours and 9-12hours, connected by a 3rd line.</p> <p>Accept a bar graph.</p>	<p>Plots both parts correctly and continuously: 4 – 8 hours and 8 – 12hours, ie accept ambiguity at 8.</p> <p>Accept discrete points plotted.</p>	<p>Deals with the step up correctly i.e. cost for 8hrs is \$260 and not \$320 TWO continuous pieces, with no ambiguity.</p> <p>Accept absence of points between 8 and 9 hours.</p>
(b) (c)	<p>\$60</p> <p>At the end of 8 hours, another \$60 payment of travel is required.</p>	<p>Value found.</p> <p>Description given.</p> <p>Accept <i>either</i> as evidence for “u”.</p>		
(d)	<p>labour = $30 \times 25 = 750$ Travel = $4 \times 60 = 240$ Total = 990</p>	<p>Correctly finds: Cost of labour. OR Cost of travel.</p>	<p>Correct cost found.</p> <p>Consistent with parts (b) and (c) above.</p>	
(e)	<p>Zarko: $P = 35h$ Ian: $P = 25h + 60d$ (for day number d.) For day 1, 0 – 8hrs: $35n = 25h + 60$ $n = 6$ For day 2, 8 – 16hrs: $35n = 25n + 120$ $n = 12$ For day 3, 16 – 24hrs: $35h = 25h + 180$ $h = 18$ For day 4, 24 – 32 hrs: $35h = 25h + 240$ $h = 24$, which is NOT a number of hours for day 4! There will be no further intersections of Ian and Zarko’s graphs.</p>	<p>Finds one correct solution.</p> <p>OR Misinterpretation of the question (which simplifies the problem) results in finding Zarko’s hours that give the same final cost as Q2(d). I.e, look for 2(d) answer, being divided by 35.</p>	<p>Equation formed and used OR graph used to find to find one solution.</p> <p>Accept the use of a table to justify the solution.</p>	<p>Finds two correct solutions, with support: graph and/or equation. No incorrect values given.</p> <p>Accept the use of a table to justify the solution.</p>
(f)	<p>$P = 40h + 60$</p>	<p>Correct gradient OR intercept in the equation.</p>	<p>Equation given.</p>	

NØ – no response, no relevant evidence

N1 – at least one attempt at one part-question

N2 – one of u

A3 – 2 of u OR t and u OR r and u

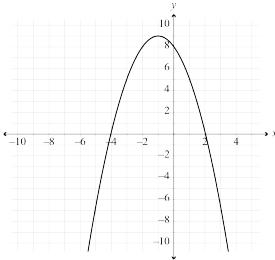
A4 – 3 of u

M5 – 1 of r AND 2 of u OR t AND 2 of u

M6 – 2 of r OR 1 of r AND 3 of u OR t and 3 of u

E7 – 1 of t AND 1 of r

E8 – 2 of t OR 1 of t AND 2 of r

Question	Expected Coverage	Achievement	Achievement with Merit	Achievement with Excellence
		<i>Investigate relationships between tables, equations and graphs.</i>	<i>Investigate relationships between tables, equations and graphs, using relational thinking.</i>	<i>Investigate relationships between tables, equations and graphs, using extended abstract thinking.</i>
THREE (a)	<p>Each time a table is added, 4 more people are added to the total, 2 on each side of the table. With ONE of:</p> <ul style="list-style-type: none"> • 4 is the number in front of n in the equation • and 4 is the slope of the graph <p>There are 2 people, one at each end, of every table arrangement.</p> <p>With ONE of:</p> <ul style="list-style-type: none"> • 2 is the number added to the $4n$ in the equation • 2 is where the graph would cut the y axis(although not really meaningful here). <p>Graph has been drawn as discrete points as you cannot have part people or tables OR a comment that n and p are whole numbers.</p>	ONE valid comment relating the graph or the equation to the number of people at the tables.	TWO valid comments relating the graph or the equation to the number of people at the tables.	THREE valid comments relating the graph or the equation to the number of people at the tables.
(b)		Correct graph x -intercepts, -4 and 2 , y -intercept, 8 orientation, maximum $(-1,9)$		

<p>(c)(i)</p>	<p>x-intercepts (3,0) and (-3,0) Accept $x = -3, 3$ y-intercept (0,-9) Accept $y = -9$</p>	<p>Giving the intercepts.</p>		

Judgement Statement

	Not Achieved	Achievement	Achievement with Merit	Achievement with Excellence
Score range	0 – 8	9 – 14	15 – 18	19 – 24