Functional Skills Mathematics

Level 1 Sample Assessment Material

Mark Scheme

Task 1 - Energy Saving

	Process	Mark	Evidence	Aspect	Specification Criteria
a	Find number and type of light bulbs required	1	Lists any 10 bulbs	RC	**Identify and obtain necessary information to tackle the problem**
		2	**Chooses 8, 100W bulbs and 2, 60W bulbs**		
b	Replace conventional bulbs	1	Shows the same number of bulbs as part (a) but not all wattage equivalences are correct or not lowest replacement values. 8, 21-25W and 2, 16-18W.	RF	**Understand practical problems in familiar and unfamiliar contexts and situations**
		2	**Replaces "their" conventional bulbs listed in part (a) with the appropriate, equivalent energy saving bulbs (or range) from the table.** **8, 20W and 2, 15W**		
b	Justify choice of replacement energy saving bulbs	1	Uses consistent replacement values without justification.	AI	**Examine patterns and relationships as values are changed.**
		2	**Offers valid justifications for their choice of replacement values.**		
c	Method to find total number of watts	1	A method of **totalling** any wattage from (a) or (b)	RT	**Select mathematics in an organised way to find**

	number of watts	**2**	**From (a) method involving number of bulbs x wattage to find total (920W or 190W or 236 or …)**		**organised way to find solutions to practical problems for different purposes**
	Method to find difference power use.	1	Method that shows **difference** between conventional and energy saving for one or more bulbs but not total.	RI	**Make an initial model and decide how to apply methods in an organised way**
		2	**Method involving difference between their total for conventional and their total for energy saving.**		
	Work out energy savings	1	Correctly applies partial method to find energy savings OR applies full method with errors.	AT	**Apply mathematics in an organised way to find solutions to practical problems for different purposes**
		2	**Their method applied correctly** **Eg (8 x 100 + 2 x 60 – 8 x 20 – 2 x 15 = 730)**		
	Explain or annotate working	1	Some annotations to working (such as headings)	IT	**Interpret and communicate solutions to practical problems, giving explanations**
		2	**Working clearly explained.**		
	Draw conclusion	1	"Correct" conclusion, compared with 700W, based on inappropriate replacements.		**Draw simple conclusions.**
		2	**Concludes that Emma is right, compared with 700W, referred to their values. (and that she saves 730W in total)**		
		16	Total		

Task 2 - Science Experiment

	Process	Mark	Evidence	Aspect	Specification Criteria
a	Set up table	1	Two columns but with either or both units missing	FR	**Understand practical problems in familiar and unfamiliar contexts and situations**
		2	**Two columns weight in gm and extension in cm**		
	Use correct zero	1	Length and not extension used	RC	**Identify and obtain necessary information to tackle the problem**
		2	**First line in table 0gm and 0.0cm seen**		
b	Clear model used	1	Graph or table used but no explanation	RI	**Make an initial model and decide how to apply methods in an organised way**
		2	**Plot graph and explain will get straight line or use table and explain will get same extension for each 100gm weight**		
	Set up graph or table	1	Scale not linear or labels incorrect or incorrect columns without units	RT	**Select mathematics in an organised way to find solutions to practical problems for different purposes**
		2	**Correctly scaled and labelled axes or correct columns with units**		
	Check results	1	Anomalous point not identified	AT	**Examine patterns and relationships as values are changed.**
		2	**Graph should be straight apart from (600gm, 17.0cm) or extension should be 2.5cm for each 100gm apart from 600gm**		
	Compare results with Kay's hypothesis	1	Make correct deduction from incorrect graph or table	IT	**Draw simple conclusions.**
		2	**Identify that because graph is straight or from table that Kay is right**		

c	Explain requirements for practical spring balance	1	Some attempt to explain requirements for practical spring balance	II	**Interpret and communicate solutions to practical problems, giving explanations**
		2	**Recognise load is directly proportional to extension for a practical spring balance**		
	Use experiment results	1	No interpretation of anomalous result	AI	**Apply mathematics in an organised way to find solutions to practical problems for different purposes**
		2	**Explain that Kay's spring is OK apart from one result**		
		16	Total		

Task 3 - Dice Game

Q	Process	Mark	Evidence	Aspect	Specification Criteria
a	Understand game	1	6 numbers on die	RC	Identify and obtain necessary information to tackle the problem
		2	**Equal chance for each number to land**		
b	Identify losing squares	1	Could land on any square shown	RF	Understand practical problems in familiar and unfamiliar contexts and situation
		2	**Only TWO squares cause Jayne to lose points (13 and 15)**		
	Uses probability to identify how likely to lose points	1	2 out of 6 chance of landing on any of the squares	AT	Apply mathematics in an organised way to find solutions to practical problems for different purposes
		2	**2 out of 6 chance of landing on 13 so she is <u>unlikely</u> to land on this square**		
c	Identifies range of possible starting squares	1	Shows evidence of using moves of up to 6 spaces	RT	Select mathematics in an organised way to find solutions to practical problems for different purposes
		2	**Writes down analysis of <u>throws and moves</u> from squares 6, 7, 8 and 9**		
	Calculates possible starting squares	1	Identifies both or either of squares (8 AND/OR 9)	RI	Make an initial model and decide how to apply methods in an organised way
		2	**Identifies squares <u>8, 9 AND 6,</u> referring to landing on 12 and moving forward two squares.**		

d	Considers how many sides the spinner could have	1	If the spinner has 6 sides the chances are the same as for the die.	II	Interpret and communicate solutions to practical problems, giving explanations
		2	**The spinner used must have at least 4 sides.**		
	Lists the chances of landing on 14 with different spinners	1	Writes chances for one or more spinners that have either more **OR** fewer sides than 6. Eg. 1 out of 4 **OR** 1 out of 7 etc.	AI	Examine patterns and relationships as values are changed.
		2	**Writes CHANCES for spinners with more sides than 6 AND fewer than 6.** **Eg 1 out of 4 AND 1 out of 7 etc.**		
	Makes a statement about the effect of changing the number of sides.	1	Changing the number of sides changes the chances.	IT	Draw simple conclusions.
		2	**As the number of sides increase the chance of landing on 14 falls** **OR As the number of sides decrease the chance increases** **OR Most likely to land on 14 if spinner only has 5 sides.**		
		16	Total		