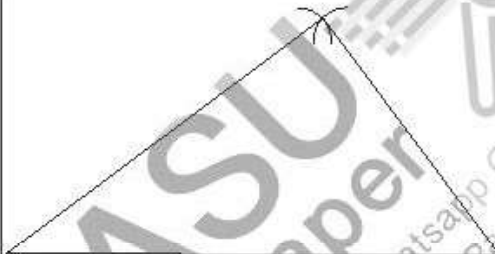


2023 Secondary One Express Mathematics EOY Marking Scheme

1	a	71.75741724	B1	
	b	71.76 or their (71.75741724) 4 s.f.	B1 or FT	
2	a	$300/5 = 60$	B1	
	b	Amount of drinks needed = 40×300 = 12000 ml = 12 l Ribena concentrated needed = $12/5 = 2.4$ l More than 2 l. Caden is right Or $2l \times 5 = 10l$ 2 l can only make 10 l of drinks. So Caden is right.	M1 A1 Or A1	
3	a			
		B2 arc must be shown. 0 if no arc is shown. Otherwise B1 for correct AC = 8 cm or BC = 6 cm.		
	b	90 accept 89 to 91	B1	

4	a	$(2x+y) - 2(x-2y)$ = $2x+y - 2x+4y$ = $5y$	M1 A1	
	b	$\frac{2x}{3} + \frac{x}{4}$ = $\frac{8x+3x}{12}$ = $\frac{11x}{12}$	M1 A1	
5		Feature and the reasoning must coincide, exist in a pair as follows:		
	a	Over claiming or exaggerating title	B1	
	b	The title gives a reader a false sensing that decrease is a lot.	B1	
	a	The vertical axis did not start from zero.	B1	
	b	The decrease will be magnified.	B1	
	a	There is missing data for some years, 2019 and 2020.	B1	
	b	There is uncertainty could be increase or decrease that were not known.	B1	
6	a	$a = \frac{-10+9}{-10-9}$ $a = \frac{1}{19}$	M1 A1	
	b	$a = \sqrt{(-10)^2 - 4(9)}$ $a = \sqrt{64}$ = 8	M1 A1	
7	a	(2, 3)	B1	
	b	$x = 2$	B1	
	c	$\frac{-2}{-4}$ = $-\frac{1}{2}$ Or $\frac{5-2}{-2-4}$ = $-\frac{1}{2}$	M1 A1 M1 A1	

8	a	77 Corresponding angles or corr \angle	B1 B1	
	b	$180 - 77 - 63 = 40$ Angle sum of a triangle or \angle sum of a Δ	B1 B1	
9		$\frac{2x+1}{4} = \frac{x}{3}$ $3(2x+1) = 4x$ $6x+3 = 4x$ $6x-4x = -3$ $2x = -3$ $x = \frac{-3}{2}$ accept $-1\frac{1}{2}$ and -1.5	M1 M1 A1	
	10	$\angle FBC = 180 - 72 = 108^\circ$ (Adjacent angles on a straight line) $\angle FGC = 108^\circ$ (vertical opposite angles) Therefore $\angle FBC = \angle FGC$ Implies opposite angles in a parallelogram Then implies $BCGF$ is a parallelogram.	M1 M1 A1	If no reason, deduct one mark
11	a	$2904 = 2^3 \times 3 \times 11^2$ Accept $2 \times 2 \times 2 \times 3 \times 11 \times 11$	B1	
	b	99	B1	
	c	30, 40	B1 B1	
12	a	$3a(1+4b-2c)$	B1	
	b	$3m(2m-1) + 2b(1-2m)$ $= 3m(2m-1) - 2b(2m-1)$ $= (3m-2b)(2m-1)$	M1 A1	
13	a	$132 + 88 + 123 + 90 + x = 3 \times 180$ $x = 107$ Otherwise sum of interior angles = 540 M1	M1 M1 A1	Sum of interior angles = 540°
	b	9 units = 180 1 unit = 20 Exterior angle = 20° $n = 360/20 = 18$	M1 A1	
14	a	27	B1	
	b	$7+4n$	B1	
	c	$7 + 4n = 101$ $N = 23.5$ is not an integer, whole number	B1	

15	a	$2.4 \text{ km} = 2400 \text{ m}$ $10 \text{ min} = 600 \text{ s}$ $2400/600 = 4 \text{ m/s}$	Either M1 A1	
	b	$10 \text{ km} = 10000 \text{ m}$ $1 \text{ h} = 3600 \text{ s}$ $10000/3600 = 2.78 \text{ m/s}$ John is faster	M1 M1 A1	
16		$\frac{3a-b}{4} - \frac{3a-2b}{6}$ $= \frac{3(3a-b) - 2(3a-2b)}{12}$ $= \frac{9a-3b-6a+4b}{12}$ $= \frac{3a+b}{12}$ Or $\frac{3a-b}{4} - \frac{3a-2b}{6}$ $= \frac{6(3a-b) - 4(3a-2b)}{24}$ $= \frac{18a-6b-12a+8b}{24}$ $= \frac{6a+2b}{24}$ $= \frac{3a+b}{12}$	M2 M1 A1 M1 M1 A1	
	17	a	$y = -3$	B1
	b	All points are plotted correctly. Straight line drawn	B1 B1	
	c	$(2, 0)$	B1	
	d	$y = 1.5$	B1	
18	a	$24000 - 15000 = \$9000$	B1	
	b	Total = 96000 $36000 \times 360 = 135$ 96000	M1 A1	

19	a	$2x$	B1	
	b	$\frac{2x+3(x+10)}{5} = 74$ (need to start with this) $2x+3x+30 = 370$ $5x+30 = 370$ (shown) Otherwise total distance = $74 \times 5 = 370$ $2x+3x+30 = 370$ $5x+30 = 370$ (shown)	M1 A1 M1 A1	
		c	$5x+30 = 370$ $x = 340/5 = 68$	A1
20	a	$12x \cdot 5 = 60$	M1 A1	
	b	$\frac{x+22}{2} \times 12 = 204$ $x+22 = 34$ $x = 12$	M1 A1	

21	a	Number of schooling days = 21 Total pocket money in August = $21 \times \$10 = \210 (shown)	M1 A1	
	b	Number of days with 2 meals = $3 + 1 + 4 + 4 + 4 = 16$ Number of days with 1 meal = 4 Total number of meals = $16 \times 2 + 4 = 36$	M1 or M1 A1	
		(c)	Min Amount of money = $36 \times 3 = \$108$ $\$210 - \$108 = \$102$ yes	M1 M1 A1

Q21	Case A	Case B	Case C	Case D
Pocket money	\$210 \checkmark 2	\$200 \times 0	\$210 \checkmark 2	\$210 \checkmark 2
Total number of meals	36 \checkmark 2	36 \checkmark 2	Number of days with 2 meals = 16 Number of days with 1 meals = 5 $16 \times 2 + 5 = 37$ 1	Number of days with 2 meals = 17 Number of days with 1 meals = 4 $17 \times 2 + 4 = 38$ 1
Save \$100	Min amount = $36 \times 5 = 180$ m1 \$210 - \$180 m1 = \$30 m1 No A1 4	Min amount = $36 \times 3 = 108$ m1 \$200 - \$108 m1 = \$92 m1 No A1 4	Min amount = $37 \times 3 = 111$ m1 \$210 - \$111 m1 = \$99 m1 No A1 4	Min amount = $38 \times 3 = 114$ m1 \$210 - \$114 m1 = \$96 m1 yes A1 3
	Full 8 marks	6 marks	7 marks	6 marks

Q21	Case E	Case F	Case G	
Pocket money	\$200 \times 0	\$210 \checkmark 2	\$210 \checkmark 2	
Total number of meals	Number of days with 2 meals = 17 Number of days with 1 meals = 5 $17 \times 2 + 5 = 39$ 0	36 \checkmark 2	$21 \times 2 = 42$ \times 0	
Save \$100	amount = $39 \times 5 = 195$ m1 \$200 - \$195 m1 = \$5 m1 No A1 4	amount = $20 \times 3 = 60$ m1 $10 \times 5 = 50$ m1 $6 \times 8 = 48$ m1 Expenditure = \$159 \$210 - \$159 m1 = \$51 m1 No A1 4	amount = $4 \times 42 \times 5 = 210$ m1 \$210 - \$210 m1 = \$0 m1 No A1 4	
	4 marks	Full 8 marks	6 marks	