



**BEATTY SECONDARY SCHOOL
END-OF-YEAR EXAMINATION 2021**

SUBJECT : Mathematics

LEVEL : Sec 2 Express

PAPER : 1

DURATION : 1 hour 30 minutes

DATE : 8 October 2021

CLASS :	NAME :	REG NO :
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READ THESE INSTRUCTIONS FIRST

Write your name, class and index number in the spaces on the top of this page.

Write in dark blue or black pen.

You may use an HB pencil for any diagrams or graphs.

Do not use staples, paper clips, glue or correction fluid.

Answer **all** questions.

If working is needed for any question, it must be shown with the answer.

Omission of essential working will result in loss of marks.

The use of an approved scientific calculator is expected, where appropriate.

If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.

For π , use either your calculator value or 3.142, unless the question requires the answer in terms of π .

The number of marks is given in brackets [] at the end of each question or part question.

The total of the marks for this paper is 50.

For Examiner's Use
50

This paper consists of **14** printed pages (including this cover page)

[Turn over

Mathematical Formulae***Mensuration***

Curved surface area of a cone = $\pi r l$

Surface area of a sphere = $4\pi r^2$

Volume of a cone = $\frac{1}{3}\pi r^2 h$

Volume of a sphere = $\frac{4}{3}\pi r^3$

3

1 A map is drawn to the scale of 1: 25 000.

(a) The distance between two towns on the map is 30 cm.

Find the actual distance.

Give your answer in metres.

Answer m [2]

(b) A park has an actual area of 2.5 km².

Calculate the area of the park on the map.

Give your answer in cm².

Answer cm² [2]

[Turn over

2 Expand and simplify

(a) (i) $(x - 5y)(2 - 7y + 12x),$

Answer [2]

(ii) $\left(3p - \frac{5q}{2}\right)^2.$

Answer [2]

(b) Express as a single fraction in its simplest form.

$$\frac{9}{(x+2)^2} - \frac{2}{x+2}$$

Answer [2]

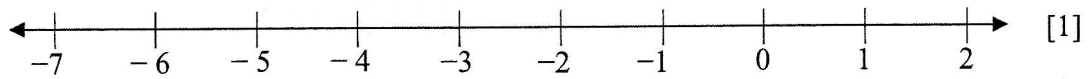
5

- 3 (a) Solve the inequality $21 - 2x < x + 36$.

Answer [2]

- (b) Represent your answer in (a) on the number line below.

Answer



- (c) Write down the smallest integer x that satisfies the inequality $21 - 2x < x + 36$.

Answer [1]

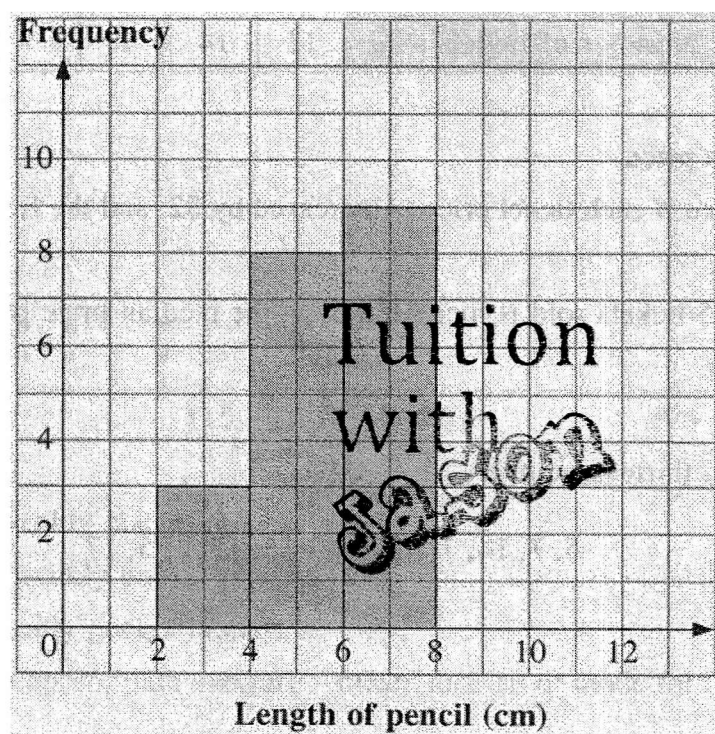
- 4 A group of students was asked to measure the length of the pencils they were using. The results are shown in the grouped frequency table below.

Length of pencil (cm)	$2 < x \leq 4$	$4 < x \leq 6$	$6 < x \leq 8$	$8 < x \leq 10$	$10 < x \leq 12$
Number of pencil(s)	3	8	9	7	3

- (a) Complete the histogram with the information provided from the table above.

Answer

[1]



- (b) Describe one aspect of the distribution of the length of pencils found in the histogram.

Answer.....

.....

.....

.....

[1]

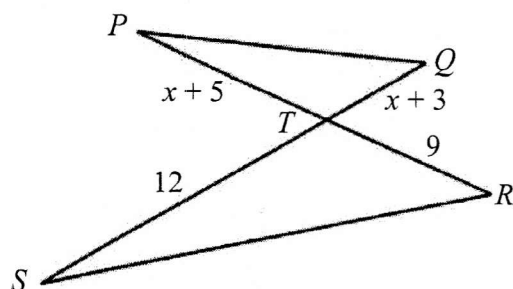
- (c) Arini concluded that more than a third of the pencils are 6 cm or less. Explain with a supporting reason if she is correct.

Answer.....
.....
.....
..... [1]

- (d) Bill was overheard saying that a dot diagram would also be able to accurately represent the distribution of pencils above. Do you agree with Bill? Why or why not?

Answer.....
.....
.....
..... [1]

5 (a)



Triangle PQT is similar to triangle SRT .

$PT = (x + 5)$ cm, $QT = (x + 3)$ cm, $TR = 9$ cm and $ST = 12$ cm.

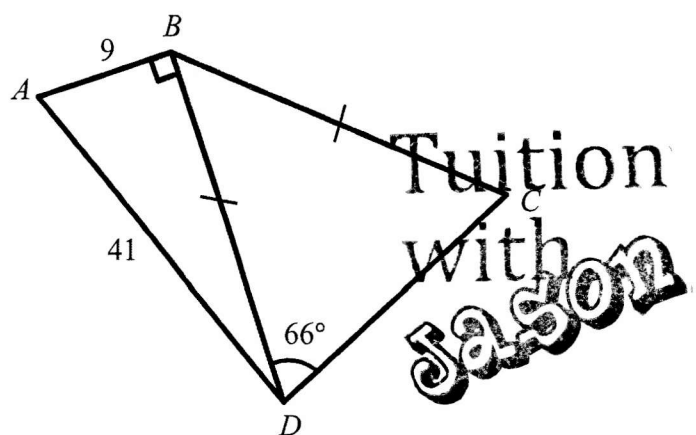
Calculate PR .

Answer cm [3]

- (b) Given that y is inversely proportional to the cube of x and that $y = p$ for a particular value of x . Find y , in terms of p , when x is tripled.

Answer $y =$ [2]

6



ABD is a right-angled triangle and $BC = BD$.

$AB = 9$ cm, $AD = 41$ cm, angle $ABD = 90^\circ$ and angle $BDC = 66^\circ$.

Calculate

(a) angle DAB ,

Answer $^\circ$ [2]

(b) BD ,

Answer cm [2]

(c) the shortest distance from B to DC .

Answer cm [2]

10

- 7 (a) Consider the equation $3x + 2y = 3$.

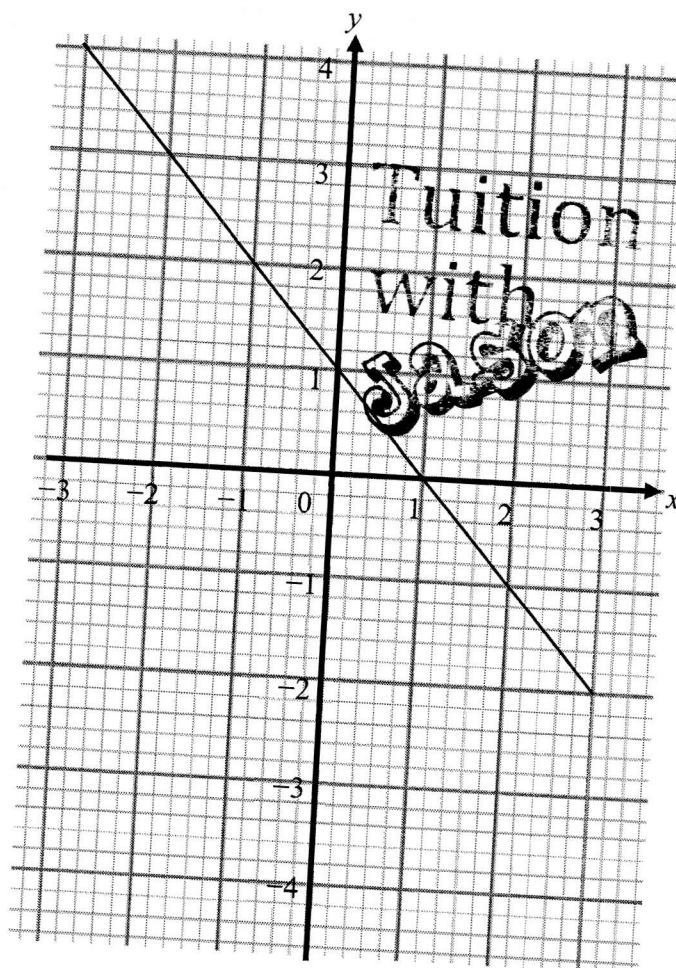
x	-1	0	3
y	a	1.5	-3

Find the value of a in the table above.

Answer $a = \dots\dots\dots$ [1]

- (b) The graph of $x + y = 1$ is given in the axes below. On the same axes, draw and label the graph of $3x + 2y = 3$.

[2]

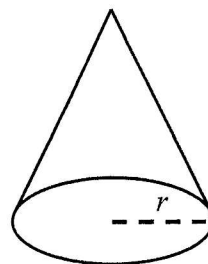
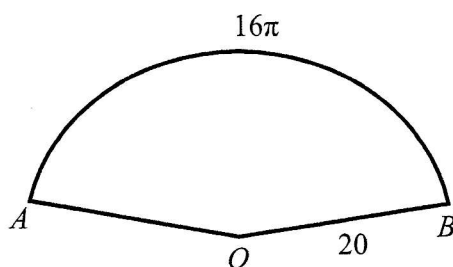


- (c) By using the graphs, solve the simultaneous equations

$$\begin{aligned} 3x + 2y &= 3 \\ \text{and } x + y &= 1. \end{aligned}$$

Answer $x = \dots\dots\dots, y = \dots\dots\dots$ [1]

- 8 (a) A sector, OAB , of a circle is folded such that OA just touches OB to form a right circular cone. The length of the arc AB is 16π cm and the radius of the sector is 20 cm.



- (i) Show that the radius, r cm, of the cone is 8 cm.

Answer

[2]

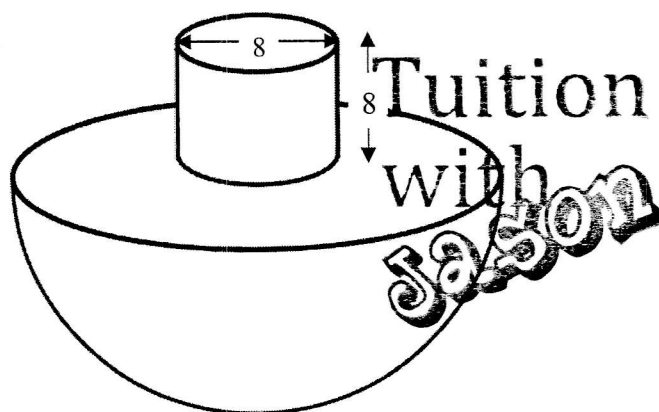
- (ii) Calculate the volume of the cone.

Answer cm^3 [3]

[Turn over

- (b) The solid is made from a cylinder and a hemisphere.
 The cylinder has diameter 8 cm and height 8 cm.
 The radius of the hemisphere is three times the radius of the cylinder.

Find, in terms of π , the **total surface area** of the solid.



Answer cm^2 [4]

- 9 (a) During the COVID-19 pandemic, a hawker was deciding if he should sign up to be on the “Grasp Panda” food delivery app to reach out to a wider customer base. Before signing up for the app, he was selling an average of $10x$ bowls of noodles at $\$(x + 1)$ per day. Write down an expression, in terms of x , for the amount of money he collected per day.

Answer \$ [1]

- (b) With the “Grasp Panda” app, the same hawker was told that he would be able to sell an average of $20x$ bowls of noodles at $\$(x + 4)$ per day. Find an expression, in terms of x , for the new amount of money collected per day

Answer \$ [1]

- (c) If the difference in the amount of money collected before and after sign up for the app was \$180, write down an equation to represent this information and show that it reduces to $x^2 + 7x - 18 = 0$.

Answer [2]

- (d) Solve the equation $x^2 + 7x - 18 = 0$, and state the reason why one of the values of x is rejected.

Answer [2]

14

- (e) Determine with working if the hawker should sign up to be listed on the “Grasp Panda” app if 30% of the hawker’s collection would be withheld by “Grasp Panda” as administrative charges.

[2]

Answer.....

.....

.....

.....

.....

- End of paper -



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Mathematical Formulae*Mensuration*

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Volume of a cone = $\frac{1}{3}\pi r^2 h$

Volume of a sphere = $\frac{4}{3}\pi r^3$

Answer **all** the questions.

- 1 (a) Factorise $a^2 - 1$.

Answer [1]

- (b) Hence, use your answer in (a) to deduce two factors of 13923.

Answer and [2]

- 2 In an experiment to test the braking system of a new car, engineers found that the braking distance, b metres, is directly proportional to the square of the speed, v km/h, of the car. In one test, the braking distance is 18 metres when travelling at 60 km/h.

Calculate

- (a) the braking distance of the car when it is travelling at a speed of 70 km/h.

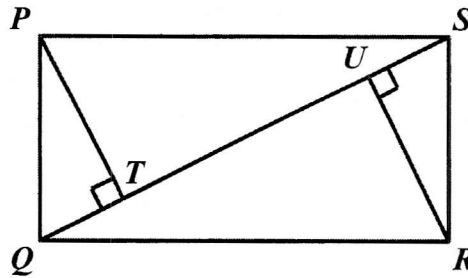
Answer m [2]

- (b) the speed of the car when the braking distance is 15 m.

Answer km/h [1]

- 3 In the diagram, $PQRS$ is a rectangle and $QTUS$ is a straight line.
 $\triangle PTQ$ is congruent to $\triangle RUS$.

Given that $\angle PTQ = \angle RUS = 90^\circ$, $PT = 9$ cm, $QS = 20$ cm and $TU = 12$ cm, find



Tuition
with
Jason

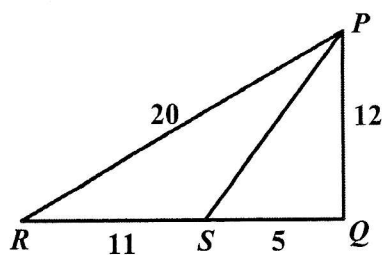
- (a) the area $\triangle QRU$,

Answer cm^2 [3]

- (b) the ratio of $\frac{\text{Area of } \triangle QRU}{\text{Area of } PQRS}$.

Answer [1]

- 4 The diagram shows $\triangle PQR$ such that $PQ = 12$ cm and $PR = 20$ cm.
 S is a point on QR such that $RS = 11$ cm and $SQ = 5$ cm.



- (a) Show $\angle PQR = 90^\circ$.

Answer..... [2]

- (b) Express each of the following as a fraction in its simplest form

- (i) $\tan \angle QRP$,

Answer [1]

- (ii) $\cos \angle QPS$.

Answer [2]

5 (a) Simplify $\frac{21bc^2}{14bc} \div \frac{c}{2b^2}$.

Answer [2]

(b) Simplify $\frac{d+2}{e-d} \times \frac{d^2-2de+e^2}{d^2+2d-de-2e}$.

Answer [4]

6 (a) (i) Solve $2x^2 + x - 6 = 0$.

Answer $x = \dots\dots\dots$ or $\dots\dots\dots$ [2]

(ii) Hence, solve $2(y - 1)^2 + y - 7 = 0$.

Answer $y = \dots\dots\dots$ or $\dots\dots\dots$ [2]

(b) It is given that $8y - 3 = \frac{y}{x}$. Express y in terms of x .

Answer $\dots\dots\dots$ [3]

- 7 (a) The table summarises the height of 35 students in a class.

Height (h cm)	Frequency
$135 < x \leq 145$	2
$145 < x \leq 155$	23
$155 < x \leq 165$	7
$165 < x \leq 175$	2
$175 < x \leq 185$	1

- (i) Calculate an estimate of the mean height of the students.

Answer cm [2]

- (ii) Explain why your answer in (ai) is only an **estimate** of the mean.

Answer.....
 [1]

- 7 (b) Twenty students from class 2A and 2B took a Mathematics test. The marks are shown in a stem-and-leaf diagram.

Class 2A						Stem	Class 2B						
9 9 7 6						1	2						
9	6	6	5	4	3	1	2	2	3	4	5		
8 7 7 6 4 3						3	3	4	4	7	7	7	8
4 2 2						4	1	1	5	6	6	9	
						5	0	0					
Key (class 2A)							Key (class 2B)						
6 1 means 16							1 2 means 12						

- (i) Write down the median mark for class 2B.

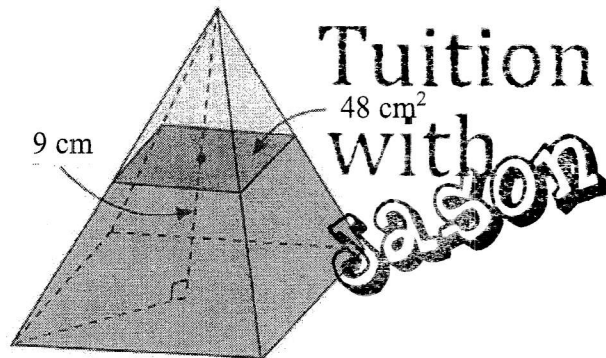
Answer [1]

- (ii) Explain briefly if class 2A or 2B performed better in the test.

Answer Class performed better because

..... [1]

- 8 The diagram shows a closed glass container in the shape of a square pyramid. It is placed on a flat surface. The height of the container is 15 cm. It contains liquid to a depth of 9 cm. The horizontal square surface area of the water level is 48 cm^2 .



- (a) Find the volume of the pyramid not occupied by the liquid.

Answer cm^3 [2]

- (b) Given that base area of the container is 300 cm^2 , find the total surface area that the liquid is in contact with the container.

Answer cm^2 [3]

- 9 A group of students took a five-question quiz. The result is shown in the table below.

Number of correct answers	0	1	2	3	4	5
Number of students	1	2	4	3	x	1

- (a) State the greatest possible value of x if the mode is 2.

Answer [1]

- (b) Calculate the value of x if the mean is $2\frac{1}{3}$.

Answer [2]

- (c) Calculate the maximum value of x if the median is 3.

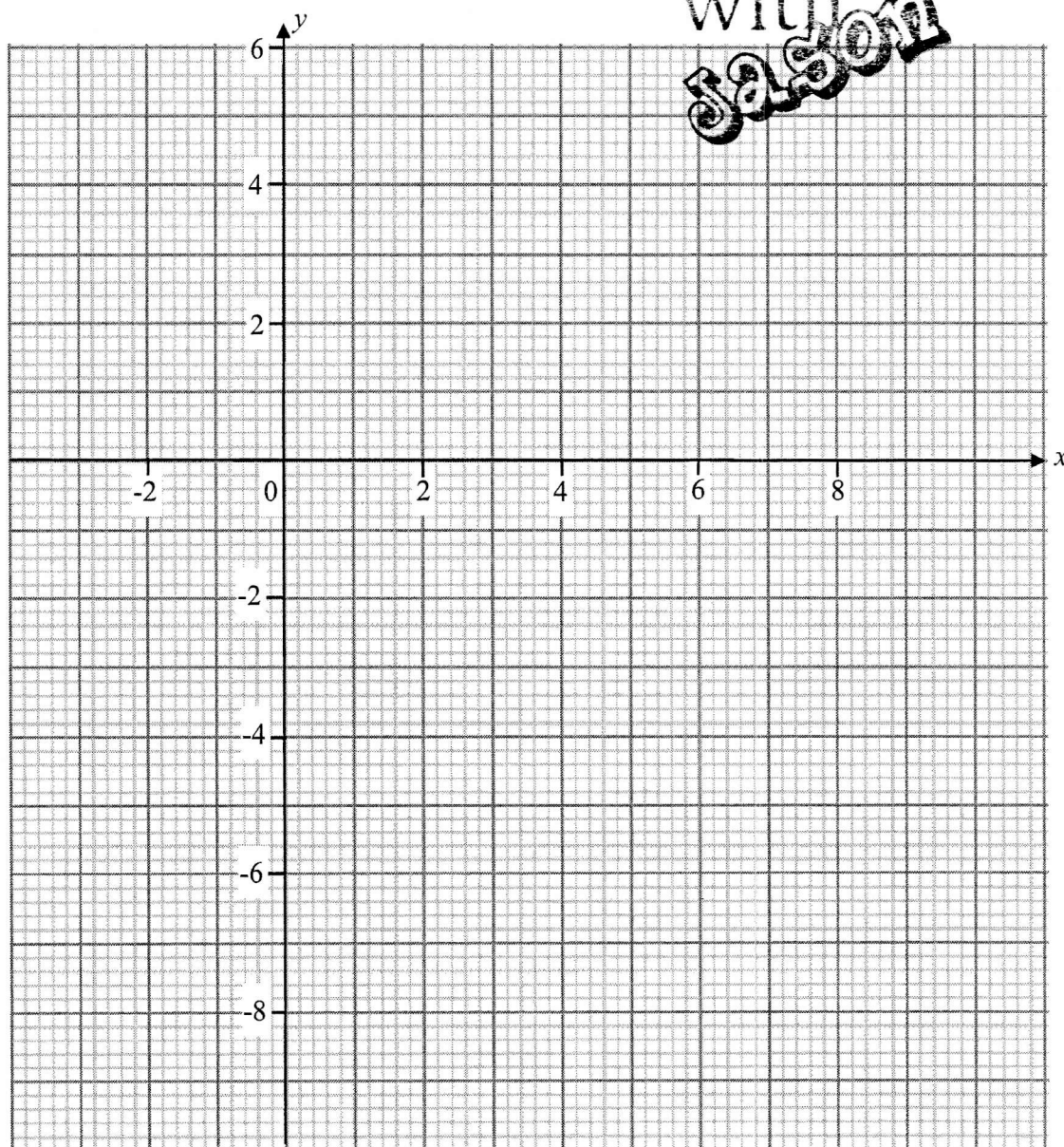
Answer [1]

- 10 (a) Complete the table of values for $y = \frac{1}{2}(6x - x^2)$.

x	-2	0	2	4	6	8
y	-8	0	4		0	-8

[1]

- (b) On the grid below, draw the graph of $y = \frac{1}{2}(6x - x^2)$ for $-2 \leq x \leq 8$.



[3]

- (c) Use your graph to find

- (i) the maximum value of y ,

Answer

[1]

(ii) the equation of the line of symmetry of the curve,

Answer [1]

(iii) the values of x when $y = 1$.

Answer $x =$ and [2]

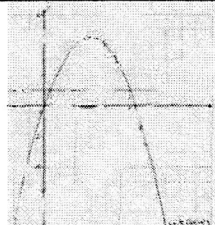
- End of Paper -

Answers:

Qn	Answers
1a	7500 m
1b	40 cm ²
2ai	$2x - 67xy + 12x^2 - 10y + 35y^2$
2aai	
2b	
3a	$x > -5$
3c	-4
5a	PR= 17 cm
5b	
6a	77.3°
6b	40 cm
6c	36.5 cm
7a	3
7c	$x = 1, y = 0$
8aai	1230 cm ³
8c	496π cm ²
9a	$10x(x+1)$
9b	$20x(x+4)$
9d	$(x-2)(x+9) = 0$ $\therefore x = 2$ or $x = -9$ We reject $x = -9$ as the quantity /price/ cost cannot be a negative number.

2021 EOY Sec 2 Express Answer Key

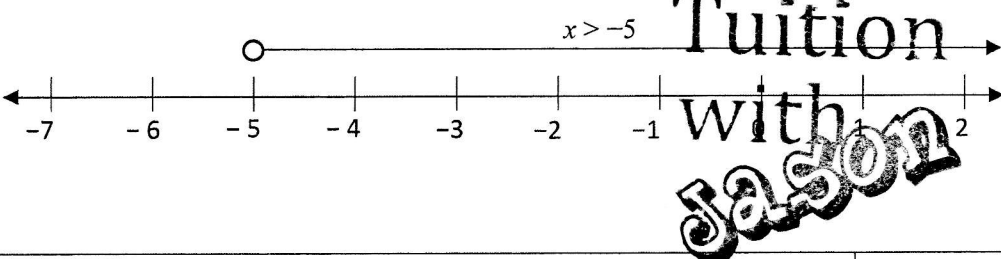
Question		Answer Key
1	(a)	$(a+1)(a-1)$
	(b)	Factors are 117 and 119.
2	(a)	$b = 24.5 \text{ m}$
	(b)	$v = 54.7 \text{ km/h}$
3	(a)	72 cm^2
	(b)	$\frac{2}{5}$
4	(a)	Not Applicable
	(bi)	$\frac{3}{4}$
	(bii)	$\frac{12}{13}$
5	(a)	$3b^2$
	(b)	-1
6	(ai)	$x = -2$ or 1.5
	(aia)	$y = -1$ or 2.5
	(b)	
7	(ai)	153 cm
	(aia)	This is because the exact value of the data is not known, or the mid-value is only an estimate.

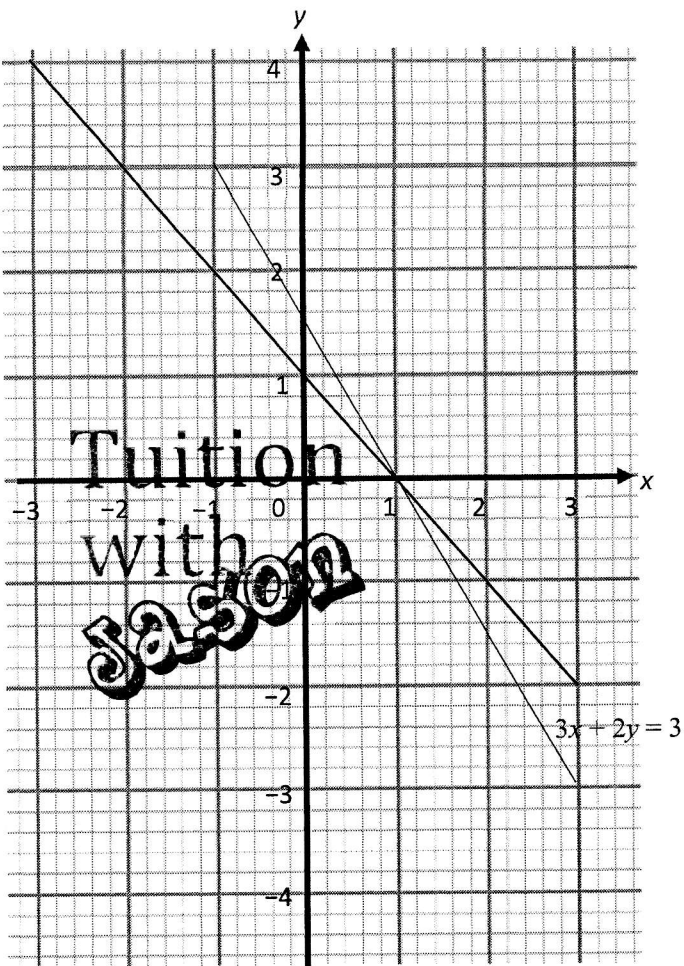
7	(bi)	37
	(bii)	Class 2B performed better because the marks cluster around stem 3, or there were more data points recorded around and above the median.
8	(a)	96 cm^3
	(b)	804 cm^2
9	(a)	3
	(b)	$x = 1$
	(c)	8
10	(a)	$y = 4$
	(b)	
	(ci)	$4.4 \leq y \leq 5.0$, in increments of 0.1 only
	(cii)	$x = 3$
	(ciii)	0.3, 0.4 or 0.5, and 5.5, 5.6, 5.7 only

Beatty Secondary School

2E Math EOY P1 2021 marking scheme

Qn	Solutions	Marks
1a	$1 \text{ cm} : 25000 \text{ cm}$ $1 \text{ cm} : 250 \text{ m}$ Answer: 30×250 $= 7500 \text{ m}$	M1 A1
1b	$1 \text{ cm} : 0.25 \text{ km}$ $1 \text{ cm}^2 : 0.0625 \text{ km}^2$ Answer : $= \frac{2.5}{0.0625}$ $= 40 \text{ cm}^2$	M1 A1
2ai	$(x - 5y)(2 - 7y + 12x)$ $= 2x - 7xy + 12x^2 - 10y + 35y^2 - 60x$ $= 2x - 67xy + 12x^2 - 10y + 35y^2$	M1 A1
2aii	$\left(3p - \frac{5q}{2}\right)^2$ $= (3p)^2 - 2(3p)\left(\frac{5q}{2}\right) + \left(\frac{5q}{2}\right)^2$ $= 9p^2 - 15pq + \frac{25q^2}{4}$ Alt method: $\left(3p - \frac{5q}{2}\right)^2$ $= 9p^2 - \frac{15pq}{2} - \frac{15pq}{2} + \frac{25q^2}{4}$ $= 9p^2 - 15pq + \frac{25q^2}{4}$	M1 A1 M1 A1

2b	$\frac{9}{(x+2)^2} - \frac{2}{x+2}$ $= \frac{9 - 2(x+2)}{(x+2)^2}$ $= \frac{9 - 2x - 4}{(x+2)^2}$ $= \frac{5 - 2x}{(x+2)^2}$	M1 A1
3a	$21 - 2x < x + 36$ $-2x - x < 36 - 21$ $-3x < 15$ $3x > -15$ $x > -5$	M1 A1
3b		B1
3c	-4	B1
4b	The distribution clustered around $6 < x \leq 8$ pencils or $4 < x \leq 10$ pencils.	B1 – any logical description
4c	There is a total of 30 pencils, so a third is 10. Since there are $3 + 8 = 11$ pencils which are 6 cm or less, Arini's conclusions is correct.	B1 – any logical description
4d	No, because the class interval/class width does not provide the exact length of the pencil, so we are unable to produce a dot diagram.	B1 – any logical description
5a	$\frac{x+3}{9} = \frac{x+5}{12}$ $12(x+3) = 9(x+5)$ $12x + 36 = 9x + 45$ $3x = 9$ $x = 3$ <i>PR</i> $= 3 + 5 + 9$ $= 17 \text{ cm}$	M1 M1 A1

7b	 B1 – correct plotting of points B1 – Straight line passing through all points	
7c	$x = 1, y = 0$	B1
8ai		M1 A1
8aii	Height of cone Volume of cone $= \frac{1}{3} \pi (8)^2 (\sqrt{336})$ $= 1228.5 (5sf)$ $= 1230 \text{ cm}^3 (3sf)$	M1(ecf) M1(ecf) A1

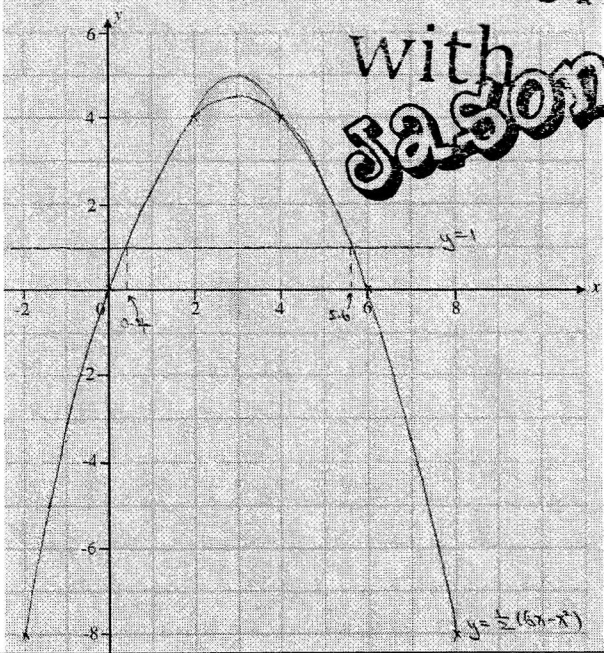
8c	$\pi(4)^2 + 2\pi(4)(8) + 2\pi(12)^2 + [\pi(12)^2 - \pi(4)^2]$ $= 16\pi + 64\pi + 288\pi + 128\pi$ $= 496\pi \text{ cm}^2$	M1 – rim M1 – curved and one circular face of cylinder M1 – curved surface area of hemisphere A1 – answer
9a	$10x(x+1)$	B1 accept expanded form
9b	$20x(x+4)$	B1 accept expanded form
9c	$20x(x+4) - 10x(x+1) = 180$ $20x^2 + 80x - 10x^2 - 10x - 180 = 0$ $10x^2 + 70x - 180 = 0$ $x^2 + 7x - 18 = 0$	M1 (b – a = 180 equation formed) A1 (pay attention to expansion and simplification)
9d	$(x-2)(x+9) = 0$ $\therefore x = 2 \text{ or } x = -9$ We reject $x = -9$ as the quantity /price/ cost cannot be a negative number.	B1 Factorisation in equation equal to zero is seen B1 ($x = -9$ is rejected with suitable explanation)
9e	Before app: Amount collected = $(10)(2)(3) = \$60$ With app: Amount collected = $(0.7)(20)(2)(6) = \$168$ The hawker should sign up for the app as the amount collected after administrative fee is still (much) higher than the without the app.	M1 – 0.7 * amount collected A1 – must indicate to sign up for the app, and provide any logical reason.

2021 EOY Sec 2 Express Worked Solution & Marking Scheme

Question		Worked Solution	Mark Allocation	
1	(a)	$(a+1)(a-1)$	1	B1
	(b)	Let $a^2 - 1 = 13923$ $a^2 = 13924$ $a = \pm\sqrt{13924}$ $a = 118$ (reject negative value) Factors are 117 and 119.	2	M1 – apply sqrts A1 (B0 if any factor is incorrect)
2	(a)	$b = kv^2$ when $b = 18, v = 60$ $18 = k(60^2)$ $k = \frac{1}{200}$ When $v = 70$ $b = \frac{1}{200}(70^2)$ $b = 24.5 \text{ m}$	2	M1 (oe – e.g. 0.005) A1 (cao)
	(b)	$15 = \frac{1}{200}v^2$ $v^2 = 3000$ $v = \pm\sqrt{3000}$ $v = 54.7 \text{ km/h (3 s.f)}$ (reject negative value)	1	B1 (cao)
3	(a)	$\triangle PTQ \cong \triangle RUS$ $RU = PT$ $RU = 9 \text{ cm}$ Since $QT = SU$, $QT + TU + US = 20$ $QT + 12 + QT = 20$ $2QT = 8$ $QT = 4$ $\text{Area } \triangle QRU = \frac{1}{2}(QU)(RU)$ $= \frac{1}{2}(16)(9)$ $= 72 \text{ cm}^2$	3	B1 B1 B1 $\sqrt{[0.5 \times (QT+12)(RU)]}$
	(b)	$\text{Area } PQRS = 2 \text{ Area } \triangle QSR$ $= 2\left(\frac{1}{2}\right)(20)(9)$ $= 180 \text{ cm}^2$		

Question		Worked Solution	Mark Allocation	
		$\frac{\text{Area of } \triangle QRU}{\text{Area of PQRS}}$ $= \frac{72}{180}$ $= \frac{2}{5}$	1	B1 (oe)
4	(a)	$PR^2 = 20^2 = 400$ $RQ^2 + PQ^2 = 16^2 + 12^2 = 400$ Since $PR^2 = RQ^2 + PQ^2$, we conclude that $\triangle PQR$ is a right-angled triangle, where $\angle PQR = 90^\circ$ (converse of Pythagoras Theorem)	2	M1 – showing that the squares of the 2 shorter sides = square of the hypotenuse. A1 (A0 if converse is not mentioned)
	(bi)	$\frac{3}{4}$	1	B1 (cao)
	(bii)	$PS = \sqrt{5^2 + 12^2}$ $PS = 13$ $\frac{12}{13}$	2	B1 (cao) B1 $\sqrt{\text{ (i.e. 12 / PS) }}$
5	(a)	$\frac{21bc^2}{14bc} \div \frac{c}{2b^2}$ $= \frac{21bc^2}{14bc} \times \frac{2b^2}{c}$ $= 3b^2$	2	M1 (change divide sign) A1 (cao)
	(b)	$\frac{d+2}{e-d} \times \frac{d^2 - 2de + e^2}{d^2 + 2d - de - 2e}$ $= \frac{d+2}{e-d} \times \frac{(d-e)^2}{d^2 + 2d - (de + 2e)}$ $= \frac{d+2}{-(d-e)} \times \frac{(d-e)^2}{d(d+2) - e(d+2)}$ $= \frac{d+2}{-(d-e)} \times \frac{(d-e)^2}{(d+2)(d-e)}$ $= -1$	4	M1 – correct factorisation of special product $(d-e)^2$ M1 – correct factorisation by grouping $(d+2)(d-e)$ M1 – correct factorisation of $-(d-e)$ A1 (cao)
6	(ai)	$2x^2 + x - 6 = 0$ $(2x - 3)(x + 2) = 0$ $2x = 3 \text{ or } x + 2 = 0$ $x = 1.5 \quad x = -2$	2	M1 – factorisation A1 (A0 if either value is incorrect)
	(aii)	$2(y-1)^2 + (y-1) - 6 = 0$ Let $y-1 = x$ $y-1 = 1.5 \quad y-1 = -2$ $y = 1.5 + 1 \quad \text{or} \quad y = -2 + 1$ $y = 2.5 \quad y = -1$	2	M1 $\sqrt{\text{substitution method seen}}$ A1 $\sqrt{\text{(A0 if either value if incorrect)}}$

Question	Worked Solution		Mark Allocation
(b)	$8y - 3 = \frac{y}{x}$ $x(8y - 3) = y$ $8xy - 3x = y$ $8xy - y = 3x$ $y(8x - 1) = 3x$ $y = \frac{3x}{8x - 1}$	3	M1 – expansion M1 – factorise A1
7 (ai)	Estimated mean height $= \frac{(140 \times 2) + (150 \times 23) + (160 \times 7) + (170 \times 2) + (180 \times 1)}{35}$ $= \frac{5370}{35}$ $= 153.42$ $= 153 \text{ cm (3sf)}$	2	M1 – use of mid-value, and $\frac{\sum fx}{\sum f}$ applied A1 (cao)
(aii)	This is because the exact value of the data is not known, or the mid-value is only an estimate.	1	B1 (any suitable answer)
(bi)	37	1	B1 (cao)
(bii)	Class 2B performed better because the marks cluster around stem 3, or there were more data points recorded around and above the median.	1	B1 (any suitable answer in support of class 2B)
8 (a)	Volume of pyramid $= \frac{1}{3} \times \text{base area} \times \text{height}$ $= \frac{1}{3} (48)(6)$ $= 96 \text{ cm}^3$	2	M1 – correct formula applied A1 (cao)
(b)	Height of large lateral surfaces $H = \sqrt{\left(\frac{\sqrt{300}}{2}\right)^2 + 15^2}$ $= \sqrt{300}$ Height of small lateral surfaces $h = \sqrt{\left(\frac{\sqrt{48}}{2}\right)^2 + 6^2}$ $= \sqrt{48}$ Area of large lateral surface $= \frac{1}{2} \times \sqrt{300} \times \sqrt{300}$ $= 150$ Area of small lateral surface		M1 – height of lateral surfaces using Pythagoras theorem

Question		Worked Solution	Mark Allocation	
		$= \frac{1}{2} \times \sqrt{48} \times \sqrt{48}$ $= 24$ $\therefore$ Total surface area of liquid in contact w container = Area of 4 (large lateral surfaces – small lateral surfaces) + Base area of container $= 4(150 - 24) + 300$ $= 804 \text{ cm}^2$	3	M1 – difference of 4 lateral surfaces areas A1 (cao)
9	(a)	3	1	B1 (cao)
	(b)	Total value $= (0 \times 1) + (1 \times 2) + (2 \times 4) + (3 \times 3) + (4x) + (5 \times 1)$ $= 24 + 4x$ Total number of students = $11 + x$ Since mean = $2\frac{1}{3}$, $\frac{24 + 4x}{11 + x} = \frac{7}{3}$ $3(24 + 4x) = 7(11 + x)$ $72 + 12x = 77 + 7x$ $5x = 5$ $x = 1$	2	M1 – formation of formula A1 (cao)
	(c)	8	1	B1 (cao)
10	(a)	$y = 4$	1	B1 (cao)
	(b)		3	G1 – plots G1 – symmetrical G1 – ‘n’ shape smooth curve
	(ci)	$4.4 \leq y \leq 5.0$, in increments of 0.1 only	1	B1
	(cii)	$x = 3$	1	B1 (cao)
	(ciii)	0.3, 0.4 or 0.5, and 5.5, 5.6, 5.7 only	2	B1, B1