Department of Education - Western Province

Year End Evaluation - 2020

Grade 10 - Mathematics

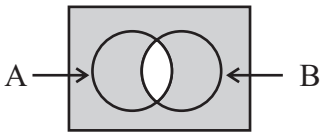
Answers

(01) $\frac{4 \times 6}{12}$ days → 1

2 days → 1 (2)

(02) $6x^2y$ → 2 (2)

(03)



2 (2)

(04) $\frac{3+2}{6y}$ → 1

$\frac{5}{6y}$ → 1 (2)

(05) $a = 120^0$ → 1

$b = 40^0$ → 1 (2)

(06) $32 = 2^{\boxed{5}}$ → 1

$\log_2 32 = \boxed{5}$ → 1 (2)

(07) between 25 and 36 → 2 (2)

(08) $\frac{1}{a} = 3$ → 1

$a = \frac{1}{3}$ → 1 (2)

(09) $x + 60^0 + 50^0 = 180^0$ → 1

$x = 70^0$ → 1 (2)

(10) $\frac{3}{9}$ or $\frac{1}{3}$ → 2 (2)

(11) $6 \times (5 \times 5)$ → 1

$150cm^2$ → 1 (2)

(12) $(x + 2)(x - 7)$ → 1+1 (2)

(13) $O\hat{A}B = \frac{180^0 - 100^0}{2}$ → 1

$= 40^0$ → 1 (2)

(14) arc length $= 36 - 14$ → 1

$= 22cm$ → 1 (2)

(15) (i) × → 1

(ii) ✓ → 1 (2)

(16) $\frac{126kg}{3}$ → 1

42kg → 1 (2)

(17) $\frac{60km}{3h}$ → 1

$20kmh^{-1}$ → 1 (2)

(18) $x = 70^0$ → 2 (2)

(19) $x = 80^0$ → 1

$y = 40^0$ → 1 (2)

(20) Gradient $= \frac{4}{2}$ → 1

$= 2$ → 1 (2)

(21) Height of the cylinder $= \frac{1540}{154} = 10cm$ 1

Height of the water column $= 5cm$ → 1 (2)

(22) ADO Δ and BDO Δ (RHS) 1+1 (2)

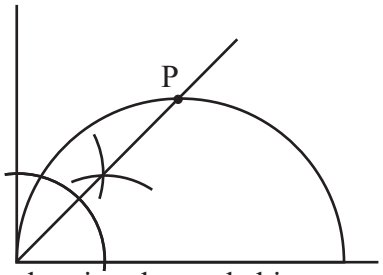
(23) $-2x \leq 12$ → 1

$x \geq -6$ → 1 (2)

(24) Rs. $4200 \times \frac{100}{12}$ → 1

Rs. 35000 → 1 (2)

(25)



drawing the angle bisector → 1

marking P → 1 (2)

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Part - B

(01) (i) $\frac{5}{8}$ → 1 (1)

(ii) $\frac{2}{5}$ of $\frac{5}{8}$ → 1

$\frac{1}{4}$ → 1 (2)

(iii) $\frac{3}{8} + \frac{1}{4}$ → 1

$\frac{3+2}{8}$ → 1

$\frac{5}{8}$ → 1

Remaining = $\frac{3}{8}$ → 1 (4)

(iv) $\frac{3}{8}$ of container → $18l$ → 1

capacity = $48l$ → 1

Quantity of water used for washing cloths } = $48 \times \frac{1}{4}$

= $12l$ → 1 (3)

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(02)(a) (i) Rs. 1200×4 → 1

Rs. 4800 → 1 (2)

(ii) $\frac{4800}{120000} \times 100\%$ → 1

4 % → 1 (2)

(iii) discount = Rs.$4800 \times \frac{10}{100}$ 1

= Rs.480 → 1

Amount paid = Rs. 4800-480

= Rs. 4320 → 1 (3)

(b) (i) Magnitude of work = 6×8 md 1

Time = $\frac{6 \times 8}{4}$ days 1

= 12 days → 1 (3)

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(03) (i) $\frac{1}{4} \times 2 \times r$ → 1

$\frac{1}{4} \times 2 \times \frac{22}{7} \times 7$ → 1

11m → 1 (3)

(ii) $21 + 7 + 21 + 11 + 7$ → 1

67m → 1 (2)

(iii) $\frac{1}{4} \times r^2$ → 1

$\frac{1}{4} \times \frac{22}{7} \times 7 \times 7$ → 1

$38.5\ m^2$ → 1 (3)

(iv) $38.5 \div 7$ → 1

5.5 m → 1 (2)

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(04) (i) 45 → 1 (1)

(ii) $360^0 \div 45$ → 1

8^0 → 1 (2)

(iii) $64^0, 80^0, 96^0, 120^0$ → 4 (4)

(iv) Drawing the pie chart → 3 (3)

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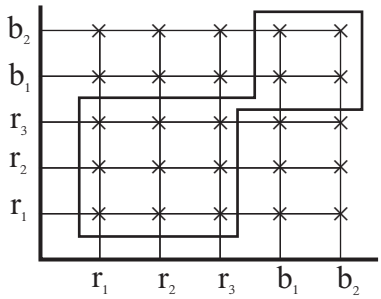
(05) (a)

(i) Second take

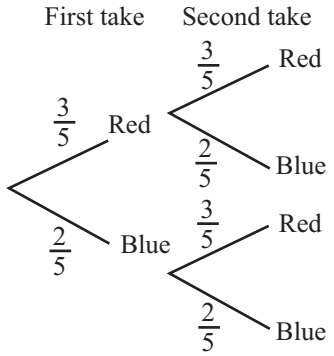


2 (2)

(ii) Circling → 1 (1)

(iii) $\frac{13}{25}$ → 2 (2)

(b) (i)



3 (3)

(ii) $\frac{6}{25} + \frac{6}{25}$ → 1

$\frac{12}{25}$ → 1 (2)

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Mathematics - II

(01) (a) $\frac{7}{3} \div \frac{5}{4}$ of $\frac{8}{5}$

$= \frac{7}{3} \div \frac{\cancel{5}}{\cancel{4}} \times \frac{\cancel{8}^{2}}{\cancel{5}}$ → 1

$= \frac{7}{3} \times \frac{1}{2}$ → 1

$= \frac{7}{6}$ → 1

$= 1\frac{1}{6}$ → 1 (4)

(b) Rs. $2\,500\,000 \times \frac{60}{100}$ → 1

Rs. 1 500 000 → 1

Rs. 4 000 000 → 1

Rs. $4\,000\,000 \times \frac{15}{100}$ → 1

Rs. 600 000 → 1

Rs. 4 000 000 + 600 000

Rs. 4 600 000 → 1 (6)

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(02) (a) (i) $y = 3 - x^2$

$= 3 - 1^2$

$= 2$ → 1 (1)

(ii) For the axes → 1

Marking the points → 1

Smooth curve → 1 (3)

(b) (i) 3 → 1 (1)

(ii) x = 1.7 and x = -1.7 → 1+1 (2)

(iii) between -1.7 and 0

or

$-1.7 < x < 0$ → 1+1 (2)

(iv) $y = 2 - x^2$ → 1 (1)

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(03) (i) (x - 2) (x + 6) → 2 (2)

(ii) $x^2 - 4 = (x - 2)(x + 2)$ → 2

$x^2 + 4x - 12 = (x - 2)(x + 6)$

LCM = (x - 2) (x + 2) (x + 6) 2 (4)

(iii) $\frac{1}{(x-2)(x+2)} - \frac{1}{(x-2)(x+6)}$ 1

$= \frac{(x+6)-(x+2)}{(x-2)(x+2)(x+6)}$ → 1

$= \frac{x+6-x-2}{(x-2)(x+2)(x-6)}$ → 1

$= \frac{4}{(x-2)(x+2)(x-6)}$ → 1 (4)

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(04) (a) $15x - 6y = 30$ → (3) → 1

$4x - 6y = 46$ → (4) → 1

$19x = 76$

$x = 4$ → 1

$4 \times 4 + 6y = 46$

$y = 5$ → 1 (4)

(b)(i) $\frac{1}{2} \times (x + 5) \times x = 33$ → 1

$x^2 + 5x = 66$

$x^2 + 5x - 66 = 0$ → 1 (2)

(ii) $(x - 6)(x + 11) = 0$ → 2

$x = 6$ or $x = -11$ 1

Perpendicular height = 6cm 1 (4)

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(05) (a) Writing the scale 1

Drawing the horizontal line 1

marking the 60^0 angle 1

Completing the diagram 1

Finding the height of the building 1 (5)

(b) Distance travel in 12 seconds $= \frac{60 \times 1000 \times 12}{60 \times 60}$ 2

= 200m 1

Length of the train = 200 - 80 1

= 120m 1 (5)

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(06) (i) (30 - 40) — 1 — (1)

(ii)

x	d	f	f × d
5	-30	2	-60
15	-20	5	-100
25	-10	9	-90
35	0	15	0
45	+10	10	+100
55	+20	6	+120
65	+30	3	+90
		50	+ 60

x column → 1
d column → 1
fd column → 1

Mean age $= A + \frac{\sum fd}{\sum f}$

$= 35 + \left(\frac{60}{50}\right)$ → 2

$= 35 + 1.2$ → 1

$= 36.2$

$=$ 36 years → 1 — (7)

(b) $\frac{19}{50} \times 100\%$ → 1

38 % → 1 — (2)

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(07) (i) $T_n = a + (n - 1)\, d$ → 1

$T_{12} = a + 11d$

$62 = 7 + 11d$ → 1

$55 = 11d$

$5 = d$ → 1

$T_{10} = a + 9d$ → 1

$= 7 + 9 \times 5$ → 1

$= 7 + 45$

$= 52$ → 1 — (6)

(ii) $S_n = \frac{n}{2}\{2a + (n - 1)\, d\}$ 1

$S_6 = \frac{6}{2}\{2 \times 7 + 5 \times 5\}$ 1

$= 3\{14 + 25\}$

$= 3 \times 39$ → 1

$= 117$ → 1 — (4)

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(08) (i) Drawing the AB line → 1

Constructing 90^0 1

Constructing BC line → 1

Constructing ABC Δ 1 — (4)

(ii) Constructing the bisector of $A\hat{C}B$ → 2 — (2)

(iii) Constructing the perpendicular bisector of AC line → 1 — (1)

(iv) Marking the center as O 1

Drawing the circle → 1 — (2)

(v) Writing the radius → 1 — (1)

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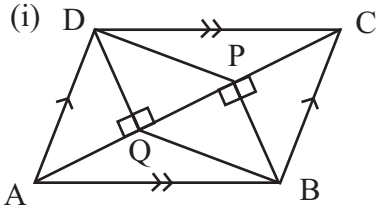
(09) (i)



2

AD = BC (opposite sides) → 1

$D\hat{A}Q = B\hat{C}P$ (alternate angles) → 1

$A\hat{Q}D = B\hat{P}C$ (perpendiculars) 1

∴ ADQ Δ ≡ BCPΔ (A.A.S.) 1 — (6)

(ii) $D\hat{Q}P = B\hat{P}Q$ (perpendiculars) 1

DQ / / BP (alternate ∠) → 1

DQ = BP (corresponding elements) 1

∴ BPDQ ▱ (pair of opposite sides are equal and parallel) → 1 — (4)

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(10) (i) Angle subtended at the center $\}= A\hat{O}C$ 1

Angle subtended on the circle $\}= A\hat{B}C$ 1 — (2)

(ii) $A\hat{C}B$ → 1

$A\hat{C}B = 90^0$ → 1 — (2)

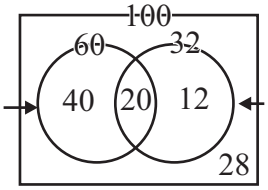
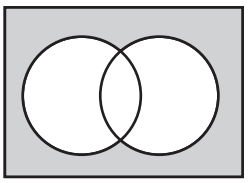
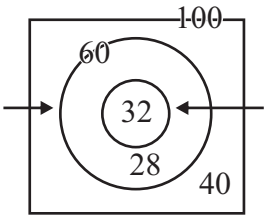
(iii) OB = OC (radius) → 1

$O\hat{B}C = O\hat{C}B$ (isosceles Δ) 1

$A\hat{O}C = 2\, O\hat{B}C$ → 1

∴ $A\hat{O}C = 2\, O\hat{C}B$ → 1 — (4)

or any other correct proof

(iv) Writing a relevant proof	2	(2)				
		10				
(11) (i) Area of a cross section $= \frac{1}{2} \times a \times 2a$	1		(12) (i)			
$= a^2$ ⟶	1		Name the Venn diagram ⟶		1	
Volume of the prism $= a^2 \times b$			Writing the number of elements in each part ⟶		4	(5)
$= a^2b$ ⟶	1	(3)	(ii) 12 ⟶		1	(1)
(ii) $\pi r^2h = a^2b$			(iii)			
$\pi a^2h = a^2b$ ⟶	1				1	(1)
$h = \frac{b}{\pi}$ ⟶	1	(2)				
(iii) $h = \frac{12}{3.14}$			(iv)			
$\log h = lg\ 12 - lg\ 3.14$ ⟶	1					
$= 1.0792 - 0.4969$ ⟶	1+1					
$= 0.5823$ ⟶	1					
$h = \text{antilog } 0.5823$						
$h = 3.822$ ⟶	1	(5)			3	(3)
		10				10