

SUMMATIVE ASSESSMENT - III - 2016-2017
MATHEMATICS
(English Medium)
PRINCIPLE OF VALUATION

Class : VII

SECTION - I

1. Let $\angle A = 40^\circ$ and $\angle B = \angle C = x^\circ$

In $\triangle ABC$,

$\angle A + \angle B + \angle C = 180^\circ$	1 Mark
$40^\circ + x^\circ + x^\circ = 180^\circ$	

$2x^\circ = 180^\circ - 40^\circ$	
$2x^\circ = 140^\circ$	

$x^\circ = \frac{140}{2} = 70^\circ$	1 Mark
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$\therefore \angle B = \angle C = x^\circ = 70^\circ$

2. Given equation : $2x - 3 = 0$

Given $x = 3$

$2 \times 3 - 3 = 0$	½ Mark
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$6 - 3 = 0$

$3 \neq 0$

$\therefore x = 3$ is not a solution to given equation. ½ Mark

3. (i) 190 grams

$= \frac{190}{1000} \text{ kgs}$	
$= \frac{19}{100} = 0.19 \text{ kgs}$	1 Mark

ii) 3240 grams	
$= \frac{3240}{1000} \text{ kgs}$	1 Mark
$= \frac{324}{100}$	
$= 3.24 \text{ kgs}$	

4. (i) Cone
 Ex : (1) Cone ice - cream
 (2) Joker's Cap | 1 Mark

- (ii) Cylinder
 Ex : Pencil, Candle etc. (for any two) | 1 Mark

SECTION - II

Note : Each problem carries 4 Marks

5. Cost price of one dozen pencils = ₹ 10
 Cost price of 150 dozens pencils = ₹ (150 × 10) = ₹ 1500
 Over head expenses = ₹ 100 | 2 Marks
 Total cost price = ₹ (1500 + 100) = ₹ 1600
 Selling price of one pencil = ₹ 1.20
 Selling price of dozen pencils = ₹ (12 × 1.20) = ₹ 14.40
 Selling price of 150 dozens pencils = ₹ (14.40 × 150) = ₹ 2160 | 2 Marks
 Profit = S.P. – C.P.
 Profit = ₹ 2160 - ₹ 21600 = ₹ 560

6. Given,
 a = 2 and b = 3

$$\left(\frac{1}{a} + \frac{1}{b}\right)^a = \left(\frac{1}{2} + \frac{1}{3}\right)^2 \quad 1 \text{ Mark}$$

$$= \left(\frac{3+2}{6}\right)^2 \quad 1 \text{ Mark}$$

$$= \left(\frac{5}{6}\right)^2 \quad 1 \text{ Mark}$$

$$\left(\frac{1}{a} + \frac{1}{b}\right)^a = \frac{25}{36} \quad 1 \text{ Mark}$$

7. Given that the angles of a quadrilateral in the ratio = 1 : 2 : 3 : 6

Sum of the ratio = 1 + 2 + 3 + 6 = 12

In quadrilateral, sum of four angles = 360°

1 Mark

∴ 1st angle = $\frac{1}{12} \times 360^\circ = 30^\circ$

2nd angle = $\frac{2}{12} \times 360^\circ = 60^\circ$

3rd angle = $\frac{3}{12} \times 360^\circ = 90^\circ$

4th angle = $\frac{6}{12} \times 360^\circ = 180^\circ$

2 Marks


i.e. 4th angle is 180°, a straight angle


∴ A quadrilateral can't be formed with these angles.

1 Mark

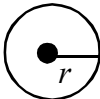
8.

Figure	Name	Perimeter
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i)		Rectangle	$2(l+b)$
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ii)		Square	4S
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iii)		Triangle	$\frac{1}{2} \times b \times h$ (or) $\frac{1}{2}bh$	1 Mark
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iv)		Circle	$2\pi r$
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9. The temperature at 12 noon = 10°C

Given temperature = 8°C below zero = 8°C

Difference between the temperature = $10^{\circ} - (-8^{\circ}) = 10^{\circ} + 8^{\circ} = 18^{\circ}\text{C}$

$$\therefore \text{Time lasted} = \frac{18}{2} = 9 \text{ hours}$$

2 Marks

i.e. at 9 O'clock the temperature would be -8°C

At mid-night the temperature = $10 + 12(-2)$

$$= 10 - 24$$

$$= -14^{\circ}\text{C}$$

2 Marks

SECTION - III

Each problem carries 8 marks.

10. a) Area of the triangle - 400 cm^2

Let, the base of the triangle be x

$$\text{Height} = 2x$$

Area of the triangle = 400 cm^2

2 Marks

$$\frac{1}{2} \times b \times h = 400$$

$$\frac{1}{2} \times x \times 2x = 400$$

$$x^2 = 400$$

$$x = \sqrt{400} = 20$$

2 Marks

\therefore Base of the triangle = $x = 20 \text{ cm}$

Height of the triangle = $2x = 2 \times 20 = 40 \text{ cm}$

2 Marks

10. b) $2^{n-5} \times 5^{n-4} = 5$

$$\frac{2^{n-5} \times 5^{n-4}}{5} = 1$$

$$\frac{2^{n-5} \times 5^{n-4}}{5^1} = 1$$

2 Marks

$$2^{n-5} \times 5^{n-4-1} = 1 \quad \left[\because \frac{a^m}{a^n} = a^{m-n} \right]$$

$$2^{n-5} \times 5^{n-5} = 1$$

$$(2 \times 5)^{n-5} = 1$$

$$(10)^{n-5} = (10)^0$$

$$\Rightarrow n - 5 = 0$$

$$n = 5$$

4 Marks

2 Marks

11. a) $A = 4x^2 + y^2 - 6xy$

$$B = 12x^2 + 3y^2 - 8xy$$

$$2A = 2(4x^2 + y^2 - 6xy)$$

$$2A = 8x^2 + 2y^2 - 12xy$$

1 Mark

$$2A+B = 8x^2 + 2y^2 - 12xy + (12x^2 + 3y^2 + 8xy)$$

$$2A+B = (8x^2 + 12x^2) + (2y^2 + 3y^2) + (-12xy + 8xy)$$

3 Marks

$$2A+B = 20x^2 + 5y^2 - 4xy$$

ii) $2B = 2(12x^2 + 3y^2 - 8xy)$

$$2B = 24x^2 + 3y^2 - 16xy$$

1 Mark

$$A - 2B = 4x^2 - y^2 - 6xy - (24x^2 + 6y^2 - 16xy)$$

$$A - 2B = 4x^2 + y^2 - 6xy - 24x^2 - 6y^2 - 16xy$$

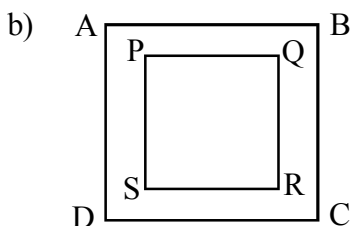
$$A - 2B = (4x^2 + 24x^2) + (y^2 - 6y^2) + (-6xy - 16xy)$$

3 Marks

$$A - 2B = 20x^2 + (-5y^2) + (-22xy)$$

$$A - 2B = -20x^2 - 5y^2 - 22xy.$$

(or)



Let PQRS be the square park of the side 100m. The shaded region the 5m wide path.

Length of AB = $100 + (5+5) = 100 + 10 = 100\text{m}$

Area of the square PQRS = $(\text{side})^2$

Area of the square PQRS = $(100)^2 = 10000\text{ m}^2$

Area of the square ABCD = $(110)^2 = 12100\text{ m}^2$

$$\begin{aligned} \text{Area of the path} &= \text{Ar}(\square ABCD) - \text{Ar}(\square PQRS) \\ &= 12100 - 10000 \end{aligned}$$

Area of the Path = 2100 m^2

Cost of the cementing $10\text{ m}^2 = ₹ 250$

Cost of the cementing $1\text{ m}^2 = ₹ \frac{250}{10}$

Cost of cementing $2100\text{ m}^2 = \frac{250}{10} \times 2100$

Cost of cementing $2100\text{ m}^2 = ₹ 52,500$

2 Marks

3 Marks

3 Marks

12. a)

In $\triangle ABC$, $\angle BAC + \angle ACB + \angle ABC = 180^\circ$

In $\triangle ACD$, $\angle CAD + \angle ADC + \angle ACD = 180^\circ$

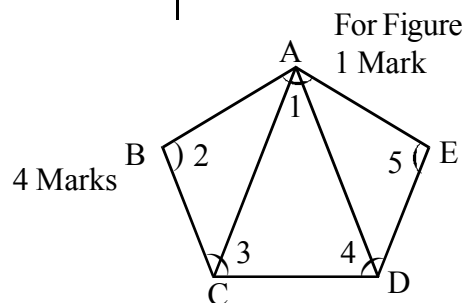
In $\triangle ADE$, $\angle DAE + \angle ADE + \angle AED = 180^\circ$

Adding (1), (2) and (3)

$$\begin{aligned} (\angle BAC + \angle ACB + \angle ABC) + (\angle CAD + \angle ADC) + \angle ACD + \\ (\angle DAE + \angle ADE + \angle AED) = 180^\circ + 180^\circ + 180^\circ \end{aligned}$$

$$\begin{aligned} (\angle BAC + \angle CAD + \angle DAE) + (\angle ABC + \angle ACB) + \\ \angle ACD + (\angle ADC + \angle ADE) + \angle AED = 540^\circ \end{aligned}$$

$$\angle 1 + \angle 2 + \angle 3 + \angle 4 + \angle 5 = 540^\circ$$



4 Marks

3 Marks

b)

(i) $\triangle ABC$ and $\triangle DCB$ are congruent

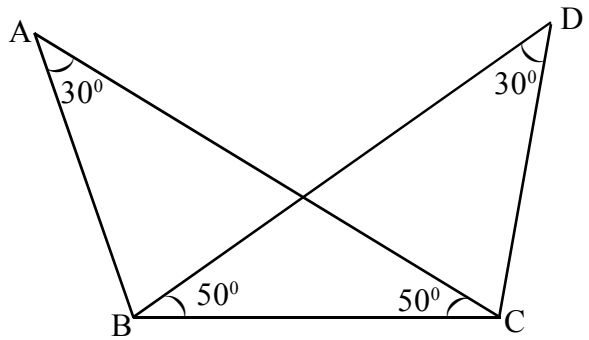
$$\angle ACB = \angle DBC$$

$$BC = BC$$

$$\angle ABC = \angle DCB$$

$$\angle ABC = \angle DCB$$

$$\therefore \triangle ABC \cong \triangle DCB$$



(ii) $\triangle AOB$ and $\triangle DOC$ are congruent

$$\angle A = \angle D$$

$$\angle ABO = \angle DCO$$

$$AB = DC \quad [\text{From (1)}]$$

$$\therefore \triangle AOB \cong \triangle DOC$$

4 Marks

4 Marks

13. a) Construction of a Triangle

i) For Rough sketch of the triangle (1)

ii) For construction of the triangle (4)

iii) For steps of construction (3)

b) Pie Chart

Item	Amount	Angle
Food	3750	$\frac{3750}{16200} \times 360^\circ = 83^\circ$
Health	1875	$\frac{1875}{16200} \times 360^\circ = 42^\circ$
Clothing	1875	$\frac{1875}{16200} \times 360^\circ = 42^\circ$
Education	1200	$\frac{1875}{16200} \times 360^\circ = 27^\circ$
Savings	7500	$\frac{7500}{16200} \times 360^\circ = 167^\circ$
Total	16200	

4 Marks

For Construction of PIE Chart

(4)

PART - B

- | | | | |
|-----|---|-----|---|
| 14. | B | 26. | A |
| 15. | A | 27. | B |
| 16. | C | 28. | D |
| 17. | B | 29. | C |
| 18. | D | 30. | D |
| 19. | B | 31. | A |
| 20. | D | 32. | D |
| 21. | B | 33. | B |
| 22. | C | | |
| 23. | A | | |
| 24. | D | | |
| 25. | C | | |