

**INDIAN SCHOOL MUSCAT
MIDDLE SECTION
DEPARTMENT OF MATHEMATICS
FINAL TERM EXAMINATION – CLASS - 8 (ANSWER KEY)**

SECTION A

| Qns | | Ans |
|-----|--|------------------------|
| 1. | Find the HCF of $4x^2y$, $6xy^2$, $2xy^2$ | $2xy$ |
| 2. | Write the standard form of 0.000007065. | 7.065×10^{-6} |
| 3. | Write the co-ordinates of the Origin. | (0, 0) |
| 4. | The number of digits in the square root of 11664 is _____. | 03 |
| 5. | $(1^3 + 2^3 + 3^3)^{-1}$ | $x = 10$ |
| 6. | Find the lateral surface area of a cube of a side 3cm. | $36cm^2$ |

SECTION B

| | | |
|-----|--|--|
| 7. | Find the least number by which 720 be multiplied to make it a perfect square. $2 \mid 720$ $2 \mid 360$ $720 = 2^2 \times 2^2 \times 3^2 \times 5$ $(\frac{1}{2} + \frac{1}{2} + \frac{1}{2})$ $2 \mid 180$ $2 \mid 90$ $5 \mid 45$ least number to be $3 \mid 9$ multiplied is 5 $(\frac{1}{2})$ $3 \mid 3$ 1 | $\frac{1}{2}$ M $\frac{1}{2}$ M Ans 1 |
| 8. | Find the value of $(2ax + 9y)(2ax + 9y)$ using suitable identity. $(2ax + 9y)(2ax + 9y) = (2ax)^2 + 2 \cdot 2ax \cdot 9y + (9y)^2$ $= 4a^2x^2 + 36axy + 81y^2$ | 1M 1M |
| 9. | The area of a rhombus is $1080 m^2$ and one of the diagonals is 72m. Find the length of the second diagonal. Area of the rhombus = $\frac{1}{2} \times d_1 \times d_2$ $1080 m^2 = \frac{1}{2} \times 72m \times d_2$ $1080 = 36 d_2$ $1080 / 36 = d_2 = 30m$ | $\frac{1}{2}$ M $\frac{1}{2}$ M $\frac{1}{2}$ M $\frac{1}{2}$ M |
| 10. | $7m - 3(m - 2) = 3m - 5$ $7m - 3m + 6 = 3m - 5$ $7m - 3m - 3m = -5 - 6$ $m = -11$ | 1 $\frac{1}{2}$ $\frac{1}{2}$ |
| 11. | Find the value of using $(5^{-1} \times 3^{-1}) \div 6^{-1}$ suitable laws of exponents. $(5^{-1} \times 3^{-1}) \div 6 = [\frac{1}{5} \times \frac{1}{3}] \div \frac{1}{6}$ $= \frac{1}{15} \times \frac{6}{1}$ $= \frac{3}{5}$ | 1M $\frac{1}{2}$ M $\frac{1}{2}$ M |
| 12. | Factorise : $ax - 2ay - bx + 2by$ $ax - 2ay - bx + 2by = a(x - 2y) - b(x - 2y)$ $= (a - b)(x - 2y)$ | 1M 1M |

SECTION C

| | | | | | | | | | | | | | | | | | | | | |
|-------------------------------------|---|--|-----------------|------|-------|-------|-------------------|--|--------|--|-----------|--|--|---------------------------|--|-----------------|-------------------------------------|--|-------------------------------|--|
| 13. | <p>Vani is 24 years older than Rani. 10 years back Vani's age was five times the age of Rani. Find their present ages</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>RANI</td><td>x</td><td>x-10</td></tr> <tr> <td>VANI</td><td>x+24</td><td>x+24 -10 = x + 14</td></tr> </table> <p style="text-align: center;">10yrs back,</p> $x + 14 = 5(x-10)$ $x + 14 = 5x - 50$ $4x = 64 \quad x = 16$ <p style="text-align: center;">Rani's age = 16 Vani's age = 40</p> | RANI | x | x-10 | VANI | x+24 | x+24 -10 = x + 14 | <p style="text-align: right;">1M</p> <p style="text-align: right;">½ M</p> <p style="text-align: right;">½ M</p> <p style="text-align: right;">½ M</p> <p style="text-align: right;">½ M</p> | | | | | | | | | | | | |
| RANI | x | x-10 | | | | | | | | | | | | | | | | | | |
| VANI | x+24 | x+24 -10 = x + 14 | | | | | | | | | | | | | | | | | | |
| 14. | <p>The area of a Trapezium is 540 m². If the parallel sides are 30m and 24 m long, find the distance between them</p> <p>$A = \frac{1}{2} h (a + b)$</p> <p>$540 = \frac{1}{2} h (30 + 24)$</p> <p>$h = 540 \times 2 / 54$</p> <p>$h = 20 \text{ m}$</p> | <p style="text-align: right;">½</p> <p style="text-align: right;">1</p> <p style="text-align: right;">½</p> <p style="text-align: right;">1</p> | | | | | | | | | | | | | | | | | | |
| 15. | <p>Find the product of (4m + 1) and (4m – 5) using suitable identity.</p> $(4m + 1) (4m - 5) = (4m)^2 + (1 - 5)4m + 1 (-5)$ $= 16 m^2 - 16m - 5$ | <p style="text-align: right;">2M</p> <p style="text-align: right;">1M</p> | | | | | | | | | | | | | | | | | | |
| 16. | <p>Reshma bought a television set for ₹42000 including 5% VAT. Find the price before VAT and VAT amount.</p> <table style="width: 100%;"> <tr> <td style="width: 33%;">Price before VAT</td> <td style="width: 33%;">Price After VAT</td> <td style="width: 33%;"></td> </tr> <tr> <td>₹ 100</td> <td>₹ 105</td> <td></td> </tr> <tr> <td>x</td> <td>₹42000</td> <td>$(\frac{1}{2}) \quad x = \frac{100 \times 42000}{105} \quad (1)$</td> </tr> <tr> <td>x = 40000</td> <td></td> <td></td> </tr> <tr> <td>price before VAT = ₹40000</td> <td></td> <td>$(\frac{1}{2})$</td> </tr> <tr> <td>VAT amount = 42000 - 40000 = ₹ 2000</td> <td></td> <td>$(\frac{1}{2} + \frac{1}{2})$</td> </tr> </table> | Price before VAT | Price After VAT | | ₹ 100 | ₹ 105 | | x | ₹42000 | $(\frac{1}{2}) \quad x = \frac{100 \times 42000}{105} \quad (1)$ | x = 40000 | | | price before VAT = ₹40000 | | $(\frac{1}{2})$ | VAT amount = 42000 - 40000 = ₹ 2000 | | $(\frac{1}{2} + \frac{1}{2})$ | |
| Price before VAT | Price After VAT | | | | | | | | | | | | | | | | | | | |
| ₹ 100 | ₹ 105 | | | | | | | | | | | | | | | | | | | |
| x | ₹42000 | $(\frac{1}{2}) \quad x = \frac{100 \times 42000}{105} \quad (1)$ | | | | | | | | | | | | | | | | | | |
| x = 40000 | | | | | | | | | | | | | | | | | | | | |
| price before VAT = ₹40000 | | $(\frac{1}{2})$ | | | | | | | | | | | | | | | | | | |
| VAT amount = 42000 - 40000 = ₹ 2000 | | $(\frac{1}{2} + \frac{1}{2})$ | | | | | | | | | | | | | | | | | | |
| 17. | <p>Factorise the expression (x² - 4x – 21) and divide by (x + 3)</p> $x^2 - 4x - 21 = x^2 - 7x + 3x - 21$ $= x(x - 7) + 3(x - 7)$ $= (x - 7) (x + 3)$ <p style="text-align: center;">Divide by (x+3) ans: (x-7)</p> | <p style="text-align: right;">1M</p> <p style="text-align: right;">1M</p> <p style="text-align: right;">½M</p> <p style="text-align: right;">½ M</p> | | | | | | | | | | | | | | | | | | |
| 18. | <p>Evaluate using laws of exponents :</p> $\frac{32 \times 125 \times a^8}{2^4 \times a^{-6} \times 25}$ $= \frac{2^5 \times 5^3 \times a^8}{2^4 \times a^{-6} \times 5^2}$ $= 2^{5-4} \times 5^{3-2} \times a^{8-(-6)}$ $= 10 a^{14}$ | <p style="text-align: right;">1M</p> <p style="text-align: right;">1M</p> <p style="text-align: right;">1M</p> | | | | | | | | | | | | | | | | | | |
| 19. | <p>Multiply (2a² + 5ab + b²) by (a² – 3b²).</p> $2a^2(a^2 - 3b^2) + 5ab(a^2 - 3b^2) + b^2(a^2 - 3b^2) \quad [1]$ $= 2a^4 - 6a^2b^2 + 5a^3b - 15ab^3 + a^2b^2 - 3b^4. \quad [1]$ $= 2a^4 - 5a^2b^2 + 5a^3b - 15ab^3 - 3b^4 \quad [1]$ | | | | | | | | | | | | | | | | | | | |
| 20. | <p>Rishi bought a cooler for ₹1200 and spent ₹40 for repair and sold it at a profit of</p> | | | | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---------|---------|---------|---------|---------|---------|-----------|---|---|----|----|---|---|-----------------|
| | <p>25% , Find the value of S.P</p> <p>Total C.P = ₹1200 + ₹40 = ₹ 1600</p> <table><tr><td>C.P</td><td>Profit</td><td>S.P</td></tr><tr><td>100</td><td>25</td><td>125</td></tr><tr><td>1600</td><td></td><td>x</td></tr></table> <p>$x = \frac{1600 \times 125}{100}$</p> <p>S.P = Rs. 2000</p> | C.P | Profit | S.P | 100 | 25 | 125 | 1600 | | x | <p>½ M</p> <p>1M</p> <p>1M</p> <p>½ M</p> | | | | | |
| C.P | Profit | S.P | | | | | | | | | | | | | | |
| 100 | 25 | 125 | | | | | | | | | | | | | | |
| 1600 | | x | | | | | | | | | | | | | | |
| 21. | <p>The distances thrown by competitors in a Javelin throw event are given as –</p> <table><tr><td>Distance(m)</td><td>20 - 30</td><td>30 - 40</td><td>40 - 50</td><td>50 - 60</td><td>60 - 70</td><td>70 - 80</td></tr><tr><td>Frequency</td><td>5</td><td>8</td><td>12</td><td>10</td><td>9</td><td>5</td></tr></table> <p>Draw a histogram for the given data.</p> <p>Marking each value & completing each bar</p> <p>No scale (cut ½ M)</p> | Distance(m) | 20 - 30 | 30 - 40 | 40 - 50 | 50 - 60 | 60 - 70 | 70 - 80 | Frequency | 5 | 8 | 12 | 10 | 9 | 5 | <p>½ M each</p> |
| Distance(m) | 20 - 30 | 30 - 40 | 40 - 50 | 50 - 60 | 60 - 70 | 70 - 80 | | | | | | | | | | |
| Frequency | 5 | 8 | 12 | 10 | 9 | 5 | | | | | | | | | | |
| 22. | <p>Construct a rhombus ABCD , AB = 4.9cm and $\angle A = 80^\circ$.</p> <p>Correct line segment AB [½]</p> <p>Drawing 80° angle at A [1]</p> <p>Drawing arc to get D [½]</p> <p>Getting point C [1]</p> | | | | | | | | | | | | | | | |
| <p style="text-align: center;">SECTION D</p> | | | | | | | | | | | | | | | | |
| 23. | <p>Find the least number to be added to 9225 to make it a perfect square. Find the square root of the number so obtained.</p> <div><div><div>97</div><div><div>9</div><div>9225</div></div><div><div>9</div><div>81</div></div><div>187</div><div><div>1125</div><div>1309</div></div></div><div><div>1309-1125=184</div><div>Least no. to be added is 184</div><div>9225+184=9409</div><div>$\sqrt{9409} = 97$</div></div><div><div>(1)</div><div>(1)</div><div>(½)</div><div>(½)</div><div>(½)</div><div>(½)</div></div></div> | | | | | | | | | | | | | | | |
| 24. | <p>Find the amount and the compound interest on ₹ 14,000 for 1 year at 10% annum compounded half yearly.</p> <p>$A = P[1 + \frac{R}{100}]^t = 14,000[1 + \frac{10}{100}]^2$</p> <p>$= 14,000 \times \frac{11}{10} \times \frac{11}{10}$</p> <p>$= 140 \times 11 \times 11$</p> <p>A = ₹16,940</p> <p>C.I = ₹16,940 - ₹ 14,000 = ₹ 2, 940</p> | <p>1M</p> <p>1M</p> <p>½ M</p> <p>½ M</p> <p>1M</p> | | | | | | | | | | | | | | |
| 25. | <p>If numerator is 2 less than the denominator of a rational number and when 1 is subtracted from numerator and denominator both, the rational number obtained is</p> | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|------------------|---|--|-------|-------|-----|------|------------------|-------------|----|----|----|-----------------------------|-----|---|
| | <div>$\frac{1}{2}$. Find the rational number</div> <div>Denominator = x ; Numerator = x – 2</div> <div>$\frac{x-2-1}{x-1} = \frac{1}{2}$</div> <div>$\frac{x-3}{x-1} = \frac{1}{2} \qquad 2(x-3) = x-1$</div> <div>$2x - x = -1 +6$</div> <div>X = 5</div> <div>The required fraction = $\frac{3}{5}$</div> | <div>$\frac{1}{2}$ M</div> <div>$\frac{1}{2}$ M</div> <div>$\frac{1}{2}$ M</div> <div>$\frac{1}{2}$ M</div> <div>1 M</div> <div>$\frac{1}{2}$</div> <div>+$\frac{1}{2}$M</div> | | | | | | | | | | | | |
| 26. | <div>The total surface area of a cylinder is $440m^2$.Find the volume of the cylinder if the radius of its base is 7m.</div> <div>Total Surface area of a cylinder = $2\pi r(r + h) = 440m^2$</div> <div>$2 \times \frac{22}{7} \times 7(7+h) = 440$</div> <div>$44 (7+h) = 440$</div> <div>$(7+h) = 440 / 44 = 10$</div> <div>$h = 10 -7 = 3m$</div> <div>$v = \pi r^2h = \frac{22}{7} \times 7 \times 7 \times 3 = 462m^3$</div> | <div>$\frac{1}{2}$ M</div> <div>$\frac{1}{2}$ M</div> <div>1M</div> <div>$\frac{1}{2}$M</div> <div>1$\frac{1}{2}$M</div> | | | | | | | | | | | | |
| 27. | <div>Draw a linear graph to show the relationship between the cost and the quantity of onions using the following data.</div> <table><tr><td>Weight (in kg)</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>Cost(in ₹)</td><td>20</td><td>40</td><td>60</td><td>80</td><td>100</td></tr></table> <div>Marking each point</div> <div>Scale & Completion of the graph</div> | Weight (in kg) | 1 | 2 | 3 | 4 | 5 | Cost(in ₹) | 20 | 40 | 60 | 80 | 100 | <div>2$\frac{1}{2}$M</div> <div>1$\frac{1}{2}$M</div> |
| Weight (in kg) | 1 | 2 | 3 | 4 | 5 | | | | | | | | | |
| Cost(in ₹) | 20 | 40 | 60 | 80 | 100 | | | | | | | | | |
| 28. | <div>Simplify using identity: $(2a + 3b)^2 - (a - 2b)^2$</div> <div>$(2a+3b+a-2b)(2a+3b-a+2b)$ [1]</div> <div>$(3a + b)(a + 5b)$ [1]</div> <div>$3a^2+15ab+ab+5b^2$ [1]</div> <div>$3a^2+16ab+5b^2$ [1]</div> | | | | | | | | | | | | | |
| 29. | <div>Construct a quadrilateral PQRS in which $\angle Q = 60^0$, $\angle R = 90^0$, QR = 5cm, PQ = 7cm and RS = 6.5cm</div> <div>Constructing 60^0& 90^0 [1+1]</div> <div>3 correct sides [$\frac{1}{2}+\frac{1}{2}+\frac{1}{2}$]</div> <div>Correct labeling [$\frac{1}{2}$]</div> | <div>$\frac{1}{2}$M</div> <div>1+1</div> <div>1M</div> <div>$\frac{1}{2}$M</div> | | | | | | | | | | | | |
| 30. | <div>The monthly sale of computers by a shopkeeper is as shown below. Draw a pie chart to represent the data.</div> <table><tr><td>Months</td><td>March</td><td>April</td><td>May</td><td>June</td></tr><tr><td>No. of computers</td><td>12</td><td>24</td><td>20</td><td>16</td></tr></table> <div>Finding the central angle</div> <div>Drawing correct angles</div> | Months | March | April | May | June | No. of computers | 12 | 24 | 20 | 16 | <div>2M</div> <div>2M</div> | | |
| Months | March | April | May | June | | | | | | | | | | |
| No. of computers | 12 | 24 | 20 | 16 | | | | | | | | | | |

