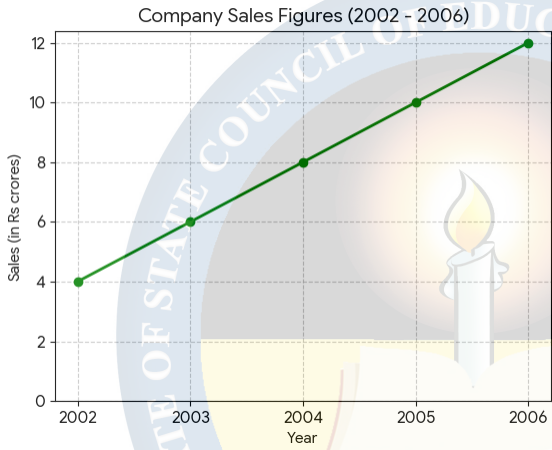


STANDARDISED ASSESSMENT FOR ELEMENTARY SCHOOLS (SAFES): 2025 - 2026
CLASS 8 MATHEMATICS
Answer Key

Q. No	Answer	Weightage
1	(a) 16	1
2	(c) 3	1
3	(a) 1:100	1
4	(c) 4^3	1
5	(b) 2.1×10^{-8}	1
6	(b) a^{mn}	1
7	(c) 1	1
8	(b) 30	1
9	(c) 24 days	1
10	(a) 3 km/h	1
11	(d) The population of a country & the area of land/person.	1
12	(c) ₹ 2400	1
13	(a) $\frac{2}{3}x^2y$	1
14	(b) 6	1
15	(a) $(x + 4)(x + 4)$	1
16	(c) $(a + b)(a - b) = a^2 - b^2$	1
17	(a) and (c) are correct	1
18	(c) the dependent variable	1
19	(c) No movement	1
20	(b) It always passes through the origin	1
21	$ab = 6^{-3} \times 6^5 = 6^{(-3+5)} = 6^2$ Therefore, the multiplicative inverse of ab is 6^{-2}	2
22	Number of sweets = $24 \times 5 = 120$ No. of children after reduced by 4 = $(24-4) = 20$ Each child will get = $120 \div 20 = 6$	2 (1+1)

23	Diameter of human hair = $0.07 \text{ mm} = 7 \times 10^{-2} \text{ mm}$ Diameter of bacterium = $0.000007 \text{ mm} = 7 \times 10^{-6} \text{ mm}$ Ratio = $(7 \times 10^{-2}) / (7 \times 10^{-6}) = 10^{(-2-(-6))} = 10^4 = 10,000$ The diameter of human hair is 10,000 times the bacterium's diameter.	2(1+1)
24	Let the length of cloth that can be purchased with ₹ 840 be x metres. Since the length and cost are in direct proportion: $8/560 = x/840$ or, $560x = 8 \times 840$ or, $560x = 6720$ or, $x = 6720/560 = 12$ Therefore, 12 metres of cloth can be purchased with ₹ 840	2(1+1)
25	Height of first pole = 10 m Shadow of first pole = 8 m Height of second pole = $x \text{ m}$ Shadow of second pole = 12 m Since height and shadow length are in direct proportion, we have $10/8 = x/12$ or, $8x = 10 \times 12$ or, $8x = 120$ or, $x = 15$ Therefore, the height of the second pole is 15 metres	2(1+1)
26	If $1 \text{ cm} = 18 \text{ km}$, then for 72 km, it would be $72 \text{ km} \div 18 \text{ km/cm} = 4 \text{ cm}$ So, Ruati's distance covered in the map would be 4 cm	2(1+1)
27	$12a^2b = 2 \times 2 \times 3 \times a \times a \times b$ $15ab^2 = 3 \times 5 \times a \times b \times b$ Common factors are: $3, a$ and b or $3ab$	2(1+1)
28	$4y^2 = (2y)^2$, $9 = 3^2$ and $12y = 2 \times 3 \times 2y$ This is of the form $a^2 - 2ab + b^2$ where, $a = 2y$ and $b = 3$ Using Identity $(a - b)^2 = a^2 - 2ab + b^2$ we have $4y^2 - 12y + 9 = (2y)^2 - 2(2y)(3) + 3^2 = (2y - 3)^2$	2(1+1)
29	$6xy - 4y - 9x + 6 = (6xy - 4y) + (-9x + 6)$ $= 2y(3x - 2) - 3(3x - 2)$ $= (3x - 2)(2y - 3)$	2(1+1)
30	Average = $\frac{(7 + 10) \text{ Crore}}{2}$ $= 8.5 \text{ Crore}$	2(1+1)
31	(a) 36.5°C (b) 9am to 10am, 10am to 11am, 2pm to 3pm	2 (1+1)
32	$(3^{-2} \times 5^4) \div (3^{-4} \times 5^2) = 3^{-2-(-4)} \times 5^{4-2} = 3^{(-2+4)} \times 5^2 = 3^2 \times 5^2 = (3 \times 5)^2 = 15^2$	3 (1+1+1)

33	Ratio = (Mass of proton)/(Mass of electron) $= (1.67 \times 10^{-27})/(9.1 \times 10^{-31})$ $= (1.67/9.1) \times 10^{(-27-(-31))}$ $= (1.67/9.1) \times 10^4$ $= 0.1835 \times 10^4 = 1.835 \times 10^3$	3 (1+1+1)										
34	$2546.37 = 2 \times 1000 + 5 \times 100 + 4 \times 10 + 6 \times 1 + 3 \times (1/10) + 7 \times (1/100)$ $= 2 \times 10^3 + 5 \times 10^2 + 4 \times 10^1 + 6 \times 10^0 + 3 \times 10^{-1} + 7 \times 10^{-2}$	3 (1.5+1.5)										
35	(a) Since for every 1 part of red pigment, 6 parts of base are needed, For 2 parts of red pigment: $2 \times 6 = 12$ parts of base For 5 parts of red pigment: $5 \times 6 = 30$ parts of base For 10 parts of red pigment: $10 \times 6 = 60$ parts of base Table: <table><tr><td>Parts of Red Pigment</td><td>1</td><td>2</td><td>5</td><td>10</td></tr><tr><td>Parts of Base</td><td>6</td><td>12</td><td>30</td><td>60</td></tr></table> (b) Yes, they are in direct proportion because the ratio of red pigment to base remains constant at 1:6 (or $1/6 = k$, where k is the constant).	Parts of Red Pigment	1	2	5	10	Parts of Base	6	12	30	60	3 (1.5+1.5)
Parts of Red Pigment	1	2	5	10								
Parts of Base	6	12	30	60								
36	Since the number of pipes and time taken are inversely proportional (more pipes $\rightarrow$ less time), Number of pipes $\times$ Time = Constant or, $8 \times 27 = 216$ (constant) (a) For 6 pipes: $6 \times t = 216$ or, $t = 216/6 = 36$ Therefore, time taken by 6 pipes is 36 minutes (b) For 12 minutes: $n \times 12 = 216$ or, $n = 216/12 = 18$ Therefore, number of pipes needed = 18 pipes	3 (1.5+1.5)										
37	Magnification and enlarged length are in direct proportion. Let actual length = x cm When magnification = 40,000, enlarged length = 8 cm Finding actual length: Using the relationship $40,000 \times \text{actual length} = \text{enlarged length}$, we have $40,000 \times \text{actual length} = 8$ cm or, Actual length = $8/40,000 = 0.0002$ cm = 0.000002 m = 2 micrometers Finding enlarged length at 16,000 times: Using direct proportion, we have, $40,000/16,000 = 8/y$, where y is the new enlarged length or, $2.5 = 8/y$ or, $y = 8/2.5 = 3.2$ Enlarged length at 16,000 times = 3.2 cm	3 (1+1+1)										
38	$a^2 - 2ab + b^2 - c^2 = (a - b)^2 - c^2$ This is of the form $x^2 - y^2$ where $x = (a - b)$ and $y = c$ Using $a^2 - b^2 = (a + b)(a - b)$,	3 (1+1+1)										

	we have $a^2 - 2ab + b^2 - c^2 = [(a - b) - c][(a - b) + c]$ $= (a - b - c)(a - b + c)$													
39	$15pq + 15 + 9q + 25p = 15pq + 25p + 9q + 15$ $= 5p(3q + 5) + 3(3q + 5) = (5p + 3)(3q + 5)$	3 (1+1+1)												
40	Dividend = $3xy(4x^2 - 36)(y + 2)$ $= 3xy \times 4 \times (x^2 - 9)(y + 2)$ $= 12xy(x + 3)(x - 3)(y + 2)$ Thus, $3xy(4x^2 - 36)(y + 2) \div 6x(x + 3)(y + 2)$ $= \frac{12xy(x + 3)(x - 3)(y + 2)}{6x(x + 3)(y + 2)} = 2y(x - 3)$	3 (2+1)												
41	(a)  <table> <caption>Company Sales Figures (2002 - 2006)</caption> <tr> <th>Year</th> <th>Sales (in Rs crores)</th> </tr> <tr> <td>2002</td> <td>4</td> </tr> <tr> <td>2003</td> <td>6</td> </tr> <tr> <td>2004</td> <td>8</td> </tr> <tr> <td>2005</td> <td>10</td> </tr> <tr> <td>2006</td> <td>12</td> </tr> </table> (b) Calculating year-on-year increase: 2002 to 2003: $6 - 4 = 2$ crore 2003 to 2004: $8 - 6 = 2$ crore 2004 to 2005: $10 - 8 = 2$ crore 2005 to 2006: $12 - 10 = 2$ crore The increase was the same every year = 2 crore per year (c) Total increase = $12 - 4 = 8$ crore Number of years = 4 Average annual increase = $8/4 = 2$ crore per year	Year	Sales (in Rs crores)	2002	4	2003	6	2004	8	2005	10	2006	12	3 (1+1+1)
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2005	10													
2006	12													
42	(a) The horizontal axis (or the x-axis) indicates the matches played while the vertical axis (or the y-axis) shows the runs scored in each match. (b) The graphs intersect between at match 4. Both batsmen scored 60 runs in Match 4. (c) Analyzing consistency: Batsman A: Shows high variability (45, 70, 50, 60, 55) Range: $70 - 45 = 25$ runs Has a peak at 70, then drops significantly Batsman B: Shows steady increase (50, 55, 60, 60, 65) Range: $65 - 50 = 15$ runs Consistent upward trend with minimal fluctuation	3 (1+1+1)												

	Batsman B is more consistent because: (i) His scores show a steady upward trend (ii) His range (15 runs) is smaller than Batsman A's (25 runs) He never had significant drops in performance																																																			
43	(a) For 5 persons: Since 2 persons need the given quantities, multiply all by $5/2 = 2.5$ <table><tr><th>Ingredient</th><th>For 2 persons</th><th>For 5 persons</th></tr><tr><td>Water</td><td>300 ml</td><td>$300 \times 2.5 = 750 \text{ ml}$</td></tr><tr><td>Sugar</td><td>2 spoons</td><td>$2 \times 2.5 = 5 \text{ spoons}$</td></tr><tr><td>Tea Leaves</td><td>1 spoon</td><td>$1 \times 2.5 = 2.5 \text{ spoons}$</td></tr><tr><td>Milk</td><td>50 ml</td><td>$50 \times 2.5 = 125 \text{ ml}$</td></tr></table> (b) Quantity table for different number of persons: <table><tr><td>No. of persons</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr><tr><td>Water (ml)</td><td>150</td><td>300</td><td>450</td><td>600</td><td>750</td><td>900</td></tr><tr><td>Sugar (spoons)</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr><tr><td>Tea leaves (spoons)</td><td>0.5</td><td>1</td><td>1.5</td><td>2</td><td>2.5</td><td>3</td></tr><tr><td>Milk (ml)</td><td>25</td><td>50</td><td>75</td><td>100</td><td>125</td><td>150</td></tr></table>	Ingredient	For 2 persons	For 5 persons	Water	300 ml	$300 \times 2.5 = 750 \text{ ml}$	Sugar	2 spoons	$2 \times 2.5 = 5 \text{ spoons}$	Tea Leaves	1 spoon	$1 \times 2.5 = 2.5 \text{ spoons}$	Milk	50 ml	$50 \times 2.5 = 125 \text{ ml}$	No. of persons	1	2	3	4	5	6	Water (ml)	150	300	450	600	750	900	Sugar (spoons)	1	2	3	4	5	6	Tea leaves (spoons)	0.5	1	1.5	2	2.5	3	Milk (ml)	25	50	75	100	125	150	5 (2.5+2.5)
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44	(a) Production with 9 machines: Number of machines and production are in direct proportion. $12/480 = 9/x$ or, $12x = 480 \times 9$ or, $12x = 4320$ or, $x = 360$ Therefore, production with 9 machines = 360 items per day (b) Machines needed to produce 1440 items: $12/480 = y/1440$ or, $480y = 12 \times 1440$ or, $480y = 17,280$ or, $y = 36$ Therefore, 36 machines are required to produce 1440 items per day (c) Working hours for 12 machines: For 15 machines working 8 hours: output = constant For 12 machines working h hours: output should be the same Machines and working hours are inversely proportional (more machines → fewer hours needed) $15 \times 8 = 12 \times h$ or, $120 = 12h$ or, $h = 10$ Therefore, 12 machines should work for 10 hours per day	5 (2 + 1.5 + 1.5)																																																		
45	Writing each term in irreducible factor form, we have $10x^2 = 2 \times 5 \times x \times x$ $-18x^3 = -2 \times 3 \times 3 \times x \times x \times x$ $14x^4 = 2 \times 7 \times x \times x \times x \times x$	5 (1+1+1+1+1)																																																		

	Common factors: 2, x, x (i.e., $2x^2$) Factoring out $2x^2$, we have $10x^2 - 18x^3 + 14x^4 = 2x^2(5 - 9x + 7x^2)$ $= 2x^2(7x^2 - 9x + 5)$ Verification: $2x^2 \times (7x^2 - 9x + 5)$ $= (2x^2)(7x^2) + (2x^2)(-9x) + (2x^2)(5)$ $= 14x^4 - 18x^3 + 10x^2 = 10x^2 - 18x^3 + 14x^4$ Irreducible factors: The irreducible factors are: 2, x, x, $(7x^2 - 9x + 5)$ Or simply: $2x^2$ and $(7x^2 - 9x + 5)$	
46	$44(x^4 - 5x^3 - 24x^2) = 44x^2(x^2 - 5x - 24)$ $= 44x^2(x^2 - 8x + 3x - 24)$ $= 44x^2[x(x - 8) + 3(x - 8)]$ $= 44x^2(x + 3)(x - 8)$ $= 4 \times 11 \times x^2 \times (x + 3) \times (x - 8)$ Thus, $44(x^4 - 5x^3 - 24x^2) \div 11x(x - 8) =$ $\frac{4 \times 11 \times x^2 \times (x + 3) \times (x - 8)}{11x(x - 8)} = 4x(x + 3)$ Verification: $11x(x - 8) \times 4x(x + 3) = 11x \times 4x \times (x - 8) \times (x + 3)$ $= 44x^2 \times (x - 8)(x + 3) = 44x^2(x^2 + 3x - 8x - 24)$ $= 44x^2(x^2 - 5x - 24) = 44(x^4 - 5x^3 - 24x^2)$	5 (2.5+2.5)
47	Ajit's Scooter Ride: Time-Distance Graph (a) (b) Using the graph to find values: (i) Time taken to cover 100 km = 2.5 hours (ii) Distance covered in 3.5 hours = 140 km (c) Yes, this is a linear graph because all points lie on a single straight line (d) Yes, the graph passes through the origin (0,0) because when time = 0, distance = 0 (e) The relationship is: Distance = 40 × Time	5 (1+1+1+1+1)