

Year 8 Term 1 Test Worked Solutions

Student Name: _____	Grade: _____
Date: _____	Score: _____

- Answer the questions in the spaces provided on the question sheets.
- If you run out of room for an answer, continue on the back of the page.
- This test has 20 questions, for a total of 100 marks.
- Attempt all 20 questions.
- Time allowed: 45 minutes.

Page:	1	2	3	4	5	Total
Points:	20	21	24	15	20	100
Score:						

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11 Year 8 Term 1 Test Answers

Question 1 2 marks

Express 0.35% as a fraction. $= \frac{7}{20}$

Question 2 2 marks

Express $1\frac{2}{5}$ as a percentage. $= 149\%$

Question 3 2 marks

Convert 510.5% to a mixed numeral. $= 5\frac{21}{200}$

Question 4 2 marks

Convert $2\frac{12}{25}$ to a percentage. $= 248\%$

Question 5 2 marks

Convert 108% to a decimal. $= 1.08$

Question 6 2 marks

Convert 0.305 to a percentage. $= 30.5\%$

Question 7 2 marks

What percentage of 16 g is 24 g? $= \frac{24}{16} \times 100\% = 150\%$

Question 8 2 marks

What percentage is 900 g of 2.5 kg? $= \frac{900}{2500} \times 100\% = 36\%$

Question 9 2 marks

Increase \$85 by 15%. $= 85 \times 115\% = \$97.75$

Question 10 2 marks

Decrease \$320 by $12\frac{1}{2}\%$. $= \$320 \times 87.5\% = \280

Question 11

Simplify these expressions:

(a) $-2pq + 5 + 14pq - 9pq - 13 - 5p$ _____ $= 3pq - 5p - 8$ [2]

(b) $2x^2 - y - 8x^2 + 5y + 6xy - 3$ _____ $= -6x^2 + 6xy + 4y - 3$ [2]

(c) $(-12ab) \times (-5bc) \times (-4ac^2)$ _____ $= -240a^2b^2c^3$ [2]

(d) $= \frac{60pq^2}{5p^2q}$ _____ $\frac{12q}{p}$ [2]

(e) $20m^8n \div 5m^3 \div 2m^2n^2$ _____ $= \frac{2m^3}{n}$ [2]

(f) $3(4x + 5) + 2(x - 5) - 4(x - 3)$ _____ $= 10x + 17$ [2]

(g) $2x^2y^2 - 6xy^2 + 8x^2y^2$ _____ $= 10x^2y^2 - 6xy^2$ [2]

(h) $(4m^6n^5)^4$ _____ $= 256m^{24}n^{20}$ [2]

Question 12

Factorise the following expressions by taking out the highest common factor (HCF):

(a) $2x^2y - 6xy^4 + 8x^2y^2$ [2]

Solution:	$2x^2y - 6xy^4 + 8x^2y^2 = 2xy(x - 3y^3 + 4xy)$
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(b) $3xy^3z^4 + 6x^3y^4z - 9x^6y^5z^4$ [3]

Solution:	$3xy^3z^4 + 6x^3y^4z - 9x^6y^5z^4 = 3xy^3z(z^3 + 2x^2y - 3x^5y^2z^3)$
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Question 13

Simplify the following algebraic fractions:

(a) $\frac{5y-2}{4} + \frac{2y-5}{7}$ [4]

<p>Solution:</p> $\frac{5y-2}{4} + \frac{2y-5}{7} = \frac{7(5y-2) + 4(2y-5)}{28}$ $= \frac{35y - 14 + 8y - 20}{28}$ $= \frac{43y - 34}{28}$
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(b) $\frac{x+7}{5} - \frac{x-5}{7}$ [4]

<p>Solution:</p> $\frac{x+7}{5} - \frac{x-5}{7} = \frac{7(x+7) - 5(x-5)}{35}$ $= \frac{7x + 49 - 5x + 25}{35}$ $= \frac{2x + 74}{35}$
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(c) $\frac{15e}{4f} \times \frac{12g}{5h}$ [4]

<p>Solution:</p> $\frac{15e}{4f} \times \frac{12g}{5h} = \frac{9eg}{fh}$

(d) $\frac{35w}{12x} \div \frac{7w^2}{4y}$ [4]

<p>Solution:</p> $\frac{35w}{12x} \div \frac{7w^2}{4y} = \frac{35w}{12x} \times \frac{4y}{7w^2} = \frac{5y}{3xw}$
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Question 14

State whether the following data is categorical (C), discrete quantitative (DQ) or continues quantitative (CQ).

(a) Academy-award winning movies _____ **C** _____ [2]

(b) Number of telephone numbers in the Yellow Pages _____ **DQ** _____ [2]

(c) Reaction times of drivers _____ **CQ** _____ [2]

(d) Number of planets in the solar system _____ **DQ** _____ [2]

Question 15.....5 marks

The size of a television screen is given by the length of its diagonals. Find the size of a television screen of length 55 cm and width 48 cm.

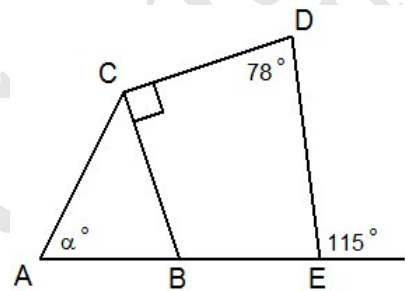
Solution:	$d = \sqrt{55^2 + 48^2} = 73 \text{ cm}$
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Question 16.....

For the diagrams shown below:

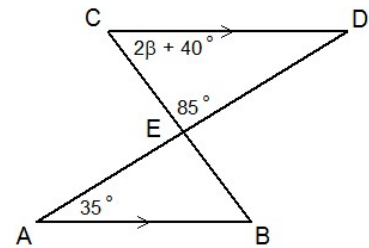
(a) If $AC = BC$, find the value of $\alpha =$ 53° [3]

<p>Solution:</p> $\angle BED = 180^\circ - 115^\circ = 65^\circ$ $\angle CBE = 360^\circ - (78^\circ + 90^\circ + 65^\circ) = 127^\circ$ $\angle CBA = 180^\circ - 127^\circ = 53^\circ$ $\angle \alpha = \angle CBA = 53^\circ$



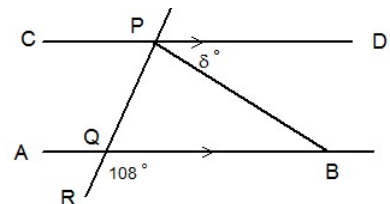
(b) If $AB \parallel CD$, find the value of $\beta =$ 10° [3]

<p>Solution:</p> $\angle CDE = \angle EAB = 35^\circ$ $2\beta + 40^\circ + 85^\circ + 35^\circ = 180^\circ$ $\angle \beta = 10^\circ.$



(c) If $PB = QB$, find the value of $\delta =$ 36° [4]

<p>Solution:</p> $\angle PQB = 180^\circ - 108^\circ = 72^\circ$ $\angle PBQ = 180^\circ - 2 \times 72^\circ = 36^\circ$ $\angle \delta = \angle PBQ = 36^\circ$



Question 17.....5 marks

A rectangle’s length is two times as long as its breadth. If it is (x-3) cm long, find its perimeter and area in term of x.

Solution:

$$L = 2B = x - 3 \Rightarrow B = \frac{x - 3}{2}$$

$$P = (L + B) \times 2 = (2B + B) \times 2 = 6B$$

$$P = 6 \times \left(\frac{x - 3}{2}\right) = 3(x - 3) = 3x - 9 \text{ cm}$$

$$A = L \times B = (x - 3) \times \frac{x - 3}{2} = \frac{(x - 3)^2}{2} \text{ cm}^2$$

Question 18.....5 marks

In a math test, 16% of the students failed. 8 of the failures were boys. The remaining $\frac{3}{5}$ of the failures were girls. 30 girls passed the test. Find the percentage of students that were boys who had passed the test.

Solution:

$\frac{3}{5}$ of the girls and $\frac{2}{5}$ of boys

$$\frac{2}{5} \times F = 8 \Rightarrow F = 8 \times \frac{5}{2} = 20$$

$$16\% \text{ of the Total} = 20 \Rightarrow T = 20 \div 16\% = 125.$$

$$G = 30 + 12 = 42 \text{ and } B = 125 - 42 = 83$$

$$\text{Boys passed} = 83 - 8 = 75$$

$$\text{Percentage of by passed} = \frac{75}{(125 - 20)} \times 100\% = 71.4\%$$

Question 19.....5 marks

Mike and Ken have a total of 580 marbles. 75% of Mike’s marbles is equal to 12% of Ken’s marbles. How many marbles does Ken have?

Solution:

$$\begin{cases} 0.75M = 0.12K \\ M + K = 580 \end{cases} \Rightarrow \begin{cases} 75M = 12K \\ M = 580 - K \end{cases}$$

$$75(580 - K) = 12K \Rightarrow 43500 - 75K = 12K \Rightarrow K = 500 \text{ marbles}$$

Question 20.....5 marks

A total of 108 men and women participated in a marathon race. After $\frac{2}{9}$ of the men and 33 women dropped out of the race, the ratio of the remaining men to women became 2:1. What was the ratio of men to women at the beginning of the race?

Solution:

$$\begin{cases} W + M = 108 \\ 2(W - 33) = \frac{7}{9}M \end{cases} \Rightarrow 18(W - 33) = 7M$$

$$18(W - 33) = 7(108 - W) \Rightarrow 18W - 594 = 756 - 7W$$

$$25W = 756 + 594 \Rightarrow W = 54 \text{ and } M = 54 \Rightarrow M : W = 1 : 1$$