

BR

ARITHMETIC - SOLN

- Change the following Roman numerals into modern Hindu-Arabic numerals:
  - CLXXXIX
  - MMMXLVI
  - MMDCCXCIX
- Find the difference of 124 and 36.
  - Find the product of 19 and 43.
  - Find the sum of 47562 and 567.
  - Find the quotient of 495 and 15.
- Evaluate:
  - $56 - 16 \div 4$
  - $112 \div (28 \div 4)$
  - $\sqrt{169} - \sqrt{64}$
  - $6 \times 32 \div (2 + 6)$
  - $213 - (88 - 29) \times 3$
  - $8 + 2^5$
  - $6 \times 32 \div 2 + 6$
  - $332 - 9 \times 4 + 30 \div 6$
  - $\frac{700 - 124}{12 \times 8}$
  - $\frac{116 + 68}{65 - 42}$
  - $11 \times 3^2 - 2^4$
  - $112 \div 28 \div 4$
- Show all your working and complete the following long division questions:
  - $3588 \div 23$
  - $15543 \div 32$
  - $48613 \div 47$
- Rewrite **without** parentheses to illustrate the distributive property:
    - $8 \times (3 + 9)$
    - $35 \times (21 - 4.8)$
    - $a(b + c + d)$
  - Rewrite **with** parentheses to illustrate the distributive property:
    - $16 \times 5 - 16 \times 22$
    - $T \times U + T \times V$
  - State whether the sentence is true or false:  $6 \times (8 \times 3) = (3 \times 6) \times 8$ .
- Use the distributive law to factorise then evaluate:
  - $225 \times 25 - 25 \times 25$
  - $13.8 \times 37 + 37 \times 36.2$
- Write as a mathematical expression using symbols:
  - Eighteen is greater than four.
  - The cube root of one hundred and twenty five is less than three squared.
  - Ninety four and ninety nine one hundredths is approximately equal to ninety five.
  - Seven is not equal to fifteen divided by two.

1 a)  $\text{CLXXXIX} = 100 + 80 + 9 = 189 \checkmark$

b)  $\text{MMMXLVI} = 3000 + 40 + 6 = 3046 \checkmark$

c)  $\text{MMDCXCIX} = 2000 + 700 + 90 + 9 = 2799 \checkmark$

2 a)  $124 - 36 = 88 \checkmark$

b)  $43 \times 19 = 43 \times (20 - 1)$   
 $= 43 \times 20 - 43$   
 $= 860 - 43$   
 $= 817 \checkmark$

c)  $47562 + 567 = 48129 \checkmark$

d) 
$$\begin{array}{r} 033 \\ 15 \overline{) 495} \\ \underline{456} \\ 45 \\ \underline{45} \\ 0 \end{array} \checkmark$$

$$3a) 56 - 16 \div 4 = 56 - 4 \\ = 52 \quad \checkmark$$

$$b) 6 \times 32 \div (2+6) = 6 \times 32 \div 8 \\ = 192 \div 8 \\ = 24 \quad \checkmark$$

$$\begin{array}{r} 32 \times \\ 16 \\ \hline 192 \\ 24 \\ \hline 8 \overline{) 1932} \end{array}$$

$$c) 6 \times 32 \div 2+6 = 192 \div 2+6 \\ = 96+6 \\ = 102 \quad \checkmark$$

$$d) \frac{116+68}{65-42} = \frac{184}{23} \\ = 8 \quad \checkmark$$

$$\begin{array}{r} 008 \\ 23 \overline{) 184} \end{array}$$

$$e) 112 \div (28 \div 4) = 112 \div 7 \\ = 16 \quad \checkmark$$

$$\begin{array}{r} 16 \\ 7 \overline{) 112} \end{array}$$

$$f) 213 - (88 - 29) \times 3 = 213 - 59 \times 3 \\ = 213 - 177 \\ = 36 \quad \checkmark$$

$$g) 332 - 9 \times 4 + 30 \div 6 = 332 - 36 + 5 \\ = 301 \quad \checkmark$$

$$h) 11 \times 3^2 - 2^4 = 11 \times 9 - 16 \\ = 99 - 16 \\ = 83 \quad \checkmark$$

$$i) \sqrt{169} - \sqrt{64} = 13 - 8 \\ = 5 \quad \checkmark$$

$$j) 8 + 2^5 = 8 + 32 \\ = 40 \quad \checkmark$$

$$k) \frac{700-124}{12 \times 8} = \frac{576}{96} \\ = \frac{144}{24} \\ = \frac{36}{6} \\ = 6 \quad \checkmark$$

$$l) 112 \div 28 \div 4 = 4 \div 4 \\ = 1 \quad \checkmark$$

$$\begin{array}{r} 004 \\ 28 \overline{) 112} \end{array}$$

$$4a) \begin{array}{r} 0156 \\ 23 \overline{) 3588} \\ \underline{236} \phantom{0} \\ 128 \phantom{0} \\ \underline{115} \phantom{0} \\ 138 \\ \underline{138} \\ 0 \end{array} \quad \checkmark \checkmark$$

$$\begin{array}{r}
 \text{b)} \quad 00485 \text{ r } 23 \quad \checkmark\checkmark \\
 32 \overline{) 15543} \\
 \underline{128} \downarrow \\
 274 \downarrow \\
 \underline{256} \downarrow \\
 183 \\
 \underline{160} \\
 23
 \end{array}$$

$$\begin{array}{r}
 \text{c)} \quad 01034 \text{ r } 15 \quad \checkmark\checkmark \\
 47 \overline{) 48613} \\
 \underline{47} \downarrow \downarrow \\
 161 \downarrow \\
 \underline{141} \downarrow \\
 203 \\
 \underline{188} \\
 15
 \end{array}$$

$$\text{5a) i) } 8 \times (3+9) = 8 \times 3 + 8 \times 9 \quad \checkmark$$

$$\text{ii) } 35 \times (21 - 4 \cdot 8) = 35 \times 21 - 35 \times 4 \cdot 8 \quad \checkmark$$

$$\text{iii) } a(b+c+d) = a \times b + a \times c + a \times d \quad \checkmark\checkmark$$

$$\text{b) i) } 16 \times 5 - 16 \times 22 = 16 \times (5 - 22) \quad \checkmark$$

$$\text{ii) } T \times U + T \times V = T \times (U + V) \quad \checkmark$$

c) True as we can multiply in any order.  $\checkmark$

$$\begin{aligned}
 \text{6a) } 225 \times 25 - 25 \times 25 &= 25 \times (225 - 25) \quad \checkmark \\
 &= 25 \times 200 \\
 &= 5000 \quad \checkmark
 \end{aligned}$$

$$\begin{aligned}
 \text{b) } 13 \cdot 8 \times 37 + 37 \times 36 \cdot 2 &= 37 \times (13 \cdot 8 + 36 \cdot 2) \quad \checkmark \\
 &= 37 \times 50 \\
 &= 1850 \quad \checkmark
 \end{aligned}$$

$$\text{7a) } 18 > 4 \quad \checkmark$$

$$\text{b) } \sqrt[3]{125} < 3^2 \quad \text{or} \quad 5 < 9 \quad \checkmark$$

$$\text{c) } 94 \frac{99}{100} \doteq 95 \quad \checkmark$$

$$\text{d) } 7 \neq 15 \div 2 \quad \checkmark$$