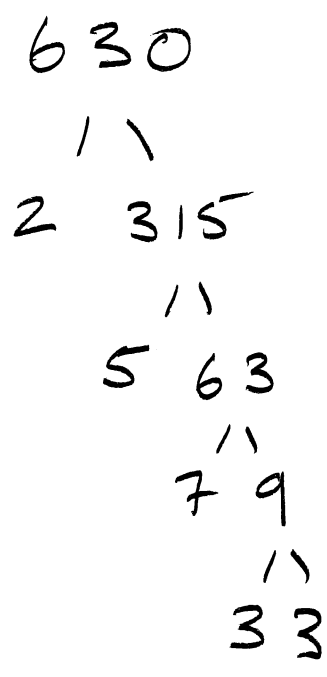


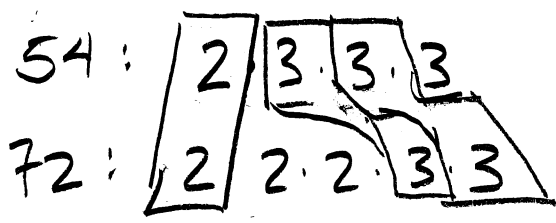
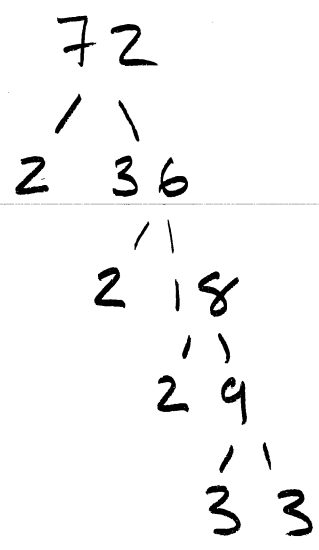
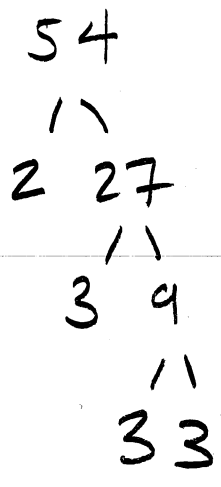
Practice Test Solutions

1)



$$630 = 2 \cdot 3 \cdot 3 \cdot 5 \cdot 7$$
$$= \boxed{2 \cdot 3^2 \cdot 5 \cdot 7}$$

2)



$$\text{GCF} = 2 \cdot 3 \cdot 3 \Rightarrow 18$$

3)

$$\begin{array}{r}
 24 \\
 \diagdown \diagup \\
 2 \quad 12 \\
 \quad \diagdown \diagup \\
 \quad 3 \quad 4 \\
 \quad \quad \diagdown \diagup \\
 \quad \quad 2 \quad 2
 \end{array}$$

$$\begin{array}{r}
 56 \\
 \diagdown \diagup \\
 7 \quad 8 \\
 \quad \diagdown \diagup \\
 \quad 2 \quad 4 \\
 \quad \quad \diagdown \diagup \\
 \quad \quad 2 \quad 2
 \end{array}$$

$$\begin{array}{r}
 72 \\
 \diagdown \diagup \\
 2 \quad 36 \\
 \quad \diagdown \diagup \\
 \quad 2 \quad 18 \\
 \quad \quad \diagdown \diagup \\
 \quad \quad 2 \quad 9 \\
 \quad \quad \quad \diagdown \diagup \\
 \quad \quad \quad 3 \quad 3
 \end{array}$$

$$24: 2 \cdot 2 \cdot 2 \cdot 3 \Rightarrow 2^3 \cdot 3$$

$$56: 2 \cdot 2 \cdot 2 \cdot 7 \Rightarrow 2^3 \cdot 7$$

$$72: 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \Rightarrow 2^3 \cdot 3^2$$

$$\text{LCM} = 2^3 \cdot 3^2 \cdot 7$$

$$= 8 \cdot 9 \cdot 7$$

$$= 504$$

4)

$$\begin{array}{r}
 80 \\
 \diagdown \diagup \\
 2 \quad 40 \\
 \quad \diagdown \diagup \\
 \quad 2 \quad 20 \\
 \quad \quad \diagdown \diagup \\
 \quad \quad 5 \quad 4 \\
 \quad \quad \quad \diagdown \diagup \\
 \quad \quad \quad 2 \quad 2
 \end{array}$$

$$\begin{array}{r}
 116 \\
 \diagdown \diagup \\
 2 \quad 58 \\
 \quad \diagdown \diagup \\
 \quad 2 \quad 29
 \end{array}$$

$$\begin{array}{l}
 80: \boxed{2 \mid 2 \mid 2 \mid 2 \mid 5} \\
 116: \boxed{2 \mid 2 \mid 29}
 \end{array}$$

$$\text{GCF} = 2 \cdot 2 = 4$$

$$5) \sqrt[2]{40000}$$

$$\begin{array}{r} \diagup \diagdown \\ 5 \quad 8000 \end{array}$$

$$\begin{array}{r} \diagup \diagdown \\ 5 \quad 1600 \end{array}$$

$$\begin{array}{r} \diagup \diagdown \\ 5 \quad 320 \end{array}$$

$$\begin{array}{r} \diagup \diagdown \\ 5 \quad 64 \end{array}$$

$$\begin{array}{r} \diagup \diagdown \\ 2 \quad 32 \end{array}$$

$$\begin{array}{r} \diagup \diagdown \\ 2 \quad 16 \end{array}$$

$$\begin{array}{r} \diagup \diagdown \\ 4 \quad 4 \end{array}$$

$$\begin{array}{r} \diagup \diagdown \quad \diagup \diagdown \\ 2 \quad 2 \quad 2 \quad 2 \end{array}$$

$$\sqrt[2]{\underbrace{5 \cdot 5} \cdot \underbrace{5 \cdot 5} \cdot \underbrace{2 \cdot 2} \cdot \underbrace{2 \cdot 2} \cdot \underbrace{2 \cdot 2}}$$

$$= 5 \cdot 5 \cdot 2 \cdot 2 \cdot 2$$

$$= 200$$

$$6) \quad \text{SA of cube} = 8214 \text{ m}^2$$

$$\begin{aligned} \text{SA of side} &= \frac{8214}{6} \\ &= 1369 \text{ m}^2 \end{aligned}$$

$$\sqrt{1369}$$

$$\begin{array}{r} 37 \ 37 \\ \hline \end{array}$$

$$\sqrt{37.37}$$

$$\begin{array}{l} \text{Side} \\ \text{length} \end{array} = 37 \text{ m}$$

$$\begin{aligned} V &= (37 \text{ m})^3 \\ &= 50653 \text{ m}^3 \end{aligned}$$

$$7) \quad 12x^3 + 27x^2$$

$$3x(4 + 9x)$$

$$12x: 2 \cdot 2 \cdot 3 \cdot x$$

$$27x^2: 3 \cdot 3 \cdot 3 \cdot x \cdot x$$

$$8) \quad 12x^3y^4 + 24x^4y^3 - 30x^2y^3$$

$$\begin{array}{l}
 12x^3y^4: 2 \cdot 2 \cdot 3 \cdot x \cdot x \cdot x \cdot y \cdot y \cdot y \cdot y \\
 24x^4y^3: 2 \cdot 2 \cdot 2 \cdot 3 \cdot x \cdot x \cdot x \cdot x \cdot y \cdot y \cdot y \\
 30x^2y^3: 2 \cdot 3 \cdot 5 \cdot x \cdot x \cdot y \cdot y \cdot y
 \end{array}$$

$$\begin{aligned}
 \text{GCF} &= 2 \cdot 3 \cdot x \cdot x \cdot y \cdot y \cdot y \\
 &= 6x^2y^3
 \end{aligned}$$

$$9) \quad 36x^2y - 45xy + 81xy^2$$

$$\begin{array}{l}
 36x^2y: 2 \cdot 2 \cdot 3 \cdot 3 \cdot x \cdot x \cdot y \\
 45xy: 3 \cdot 3 \cdot 5 \cdot x \cdot y \\
 81xy^2: 3 \cdot 3 \cdot 3 \cdot 3 \cdot x \cdot y \cdot y
 \end{array}$$

$$\begin{aligned}
 \text{GCF} &= 3 \cdot 3 \cdot x \cdot y \\
 &= 9xy
 \end{aligned}$$

$$9xy(4x - 5 + 9y)$$

$$10) (x+4)(x-6)$$

	x	4
x	x · x x ²	x · 4 4x
-6	x · -6 -6x	4 · -6 -24

$$x^2 + \underline{4x} - \underline{6x} - 24$$

$$x^2 - 2x - 24$$

OR

$$(x+4)(x-6)$$

$$x^2 - \underline{6x} + \underline{4x} - 24$$

$$x^2 - 2x - 24$$

$$11) -16 - 6x + x^2$$

$$x^2 - 6x - 16$$

$$\underline{-8} \times \underline{2} = -16 \text{ (A} \times \text{C)}$$

$$\underline{-8} + \underline{2} = -6 \text{ (B)}$$

	x	-8
x	x ²	-8x
2	2x	-16

$$(x+2)(x-8)$$

$$12) \quad x^2 - 4x - 117$$

$$\quad \underline{9} \times \underline{-13} = -117$$

$$\quad \underline{9} + \underline{-13} = -4$$

	x	9
x	x^2	$9x$
-13	$-13x$	-117

$$(x+9)(x-13)$$

$$13) \quad 12x^2 - 38x - 154$$

Common Factor? \Rightarrow Yes, 2

$$\textcircled{2} (6x^2 - 19x - 77)$$

$$\underline{-33} \times \underline{14} = -462$$

$$\underline{-33} + \underline{14} = -19$$

$$2(2x-11)(3x+7)$$

	$2x$	-11
$3x$	$6x^2$	$-33x$
7	$-14x$	-77

$$14) 2x^2 + 17x - 9$$

$$\frac{-1}{-1} \times \frac{18}{18} = -18$$

$$\frac{-1}{-1} + \frac{18}{18} = 17$$

	x	9
$2x$	$2x^2$	$18x$
-1	$-1x$	-9

$$(2x-1)(x+9)$$

$$15) (8x+3)(5x^2-5x+1)$$

	$5x^2$	$-5x$	$+1$
$8x$	$5x^2 \cdot 8x$ $40x^3$	$-5x \cdot 8x$ $-40x^2$	$1 \cdot 8x$ $8x$
3	$5x^2 \cdot 3$ $15x^2$	$-5x \cdot 3$ $-15x$	$1 \cdot 3$ 3

$$40x^3 - 40x^2 + 8x + 15x^2 - 15x + 3$$

$$40x^3 - 25x^2 - 7x + 3$$

$$16) (7x - 5y)^2$$

$$(7x - 5y)(7x - 5y)$$

	7x	-5y
7x	7x · 7x 49x ²	7x · -5y -35xy
-5y	7x · -5y -35xy	-5y · -5y 25y ²

$$49x^2 - 35xy - 35xy + 25y^2$$

$$49x^2 - 70xy + 25y^2$$

$$17) (2x + 7y)(5x - 4y - 9)$$

	5x	-4y	-9
2x	5x · 2x 10x ²	-4y · 2x -8xy	-9 · 2x -18x
7y	5x · 7y 35xy	-4y · 7y -28y ²	-9 · 7y -63y

$$10x^2 - \underline{8xy} - 18x + \underline{35xy} - 28y^2 - 63y$$

$$10x^2 + 27xy - 18x - 28y^2 - 63y$$

$$\begin{aligned}
 18) \quad & (4x+3)(6x-7) - (3x-4)(x-3) \\
 & (24x^2 - 28x + 9x - 21) - (3x^2 - 9x - 4x + 12) \\
 & (24x^2 - 19x - 21) - (3x^2 - 13x + 12) \\
 & (24x^2 - 19x - 21) + -1(3x^2 - 13x + 12) \\
 & \underline{24x^2} - \underline{19x} - \underline{21} - \underline{3x^2} + \underline{13x} - \underline{12} \\
 & 21x^2 - 6x - 33
 \end{aligned}$$

$$\begin{aligned}
 19) \quad & 4x^2 - 49y^2 \\
 & \begin{array}{cc}
 \boxed{4x^2} & \boxed{49y^2} \\
 2x & 7y
 \end{array} \\
 & (2x + 7y)(2x - 7y)
 \end{aligned}$$

$$\begin{aligned}
 20) \quad & 25x^2 - 80xy + 64y^2 \\
 & \begin{array}{cc}
 \boxed{25x^2} & \boxed{64y^2} \\
 5x & 8y
 \end{array} \\
 & (5x - 8y)(5x - 8y)
 \end{aligned}$$

$$\begin{aligned}
 \text{Check:} \\
 & 2(5x)(-8y) \\
 & 2(-40xy) \\
 & -80xy
 \end{aligned}$$