

NUMERICAL SKILLS

Part I:

1. A single batch of cookies requires $\frac{3}{4}$ cups of flour. How much flour is needed for a double batch?
2. Add the fractions and reduce your answer: $3\frac{2}{3} + \frac{5}{6}$.
3. What is the prime factorization of 100?
4. $3.85 - 0.76 = ?$
5. $(-3)^4 \cdot 2 = ?$
6. How many inches are in $3\frac{1}{2}$ feet?
7. What is 20% of 60?
8. $\frac{2}{11} + \frac{5}{11} = ?$
9. $3\frac{1}{2} \cdot \frac{5}{7} = ?$
10. $\frac{20}{12} \div 2 = ?$

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Part II:

1. If it takes $\frac{5}{6}$ yards of fabric to make one dress, how many yards are needed for 3 dresses?
a) $\frac{15}{6}$ yd b) $\frac{5}{2}$ yd c) $\frac{8}{7}$ yd d) $\frac{15}{18}$
2. $\frac{5}{8} + 2\frac{3}{4} = ?$ a) $\frac{27}{8}$ b) $\frac{27}{16}$ c) $\frac{16}{12}$ d) none of these
3. What is the prime factorization of 72?
a) $6 \cdot 12$ b) $2 \cdot 2 \cdot 3 \cdot 3 \cdot 5$ c) $2 \cdot 2 \cdot 2 \cdot 3 \cdot 3$ d) $8 \cdot 9$
4. $5.85 - 0.93 = ?$ a) 6.78 b) .0492 c) 4.55 d) 4.92

5. $(-2)^5 \cdot 3 = ?$ a) 96 b) -96 c) -190 d) 46,656
6. How many feet are in $6\frac{2}{3}$ yards? a) 20 ft b) 2.2 ft c) 23 ft
7. What is 40% of 110? a) 440 b) 4.4 c) 44 d) 2.75
8. $\frac{5}{16} + \frac{6}{16} = ?$ a) $\frac{11}{32}$ b) $\frac{11}{16}$ c) $\frac{30}{16}$ d) 11
9. $\frac{2}{3} \cdot 3\frac{1}{8} = ?$ a) $\frac{1}{4}$ b) $\frac{26}{12}$ c) $\frac{27}{11}$ d) $\frac{25}{12}$
10. $\frac{30}{4} \div 3 = ?$ a) $\frac{5}{2}$ b) $\frac{10}{4}$ c) $\frac{10}{12}$ d) $\frac{31}{12}$

Note: There is only one **reduced** answer, but there may be several ways to obtain the answer. We suggest one method.

Solutions to Numerical Skills Part I:

1. This is a doubling process so you need to double the amount of flour. $\frac{3}{4} \cdot 2 = (\frac{3}{4} \cdot \frac{2}{1}) = \frac{6}{4}$ then reduce the fraction $\frac{3 \cdot 2}{2 \cdot 2} = \frac{3}{2}$.
2. First, convert the mixed number into an improper fraction:
 $3\frac{2}{3} = 3 \cdot \frac{3}{3} + \frac{2}{3} = \frac{9+2}{3} = \frac{11}{3}$
 Next write both fraction with the lowest common denominator:
 $\frac{11}{3} + \frac{5}{6} = \frac{11 \cdot 2}{3 \cdot 2} + \frac{5}{6} = \frac{22}{6} + \frac{5}{6} = \frac{27}{6}$ which reduces to $\frac{9}{2}$.
3. Start with any two factors of 100, then continue factoring until all numbers are prime. $100 = 10 \cdot 10 = 5 \cdot 2 \cdot 5 \cdot 2$ both 5 and 2 are prime so the prime factorization is **2 · 2 · 5 · 5**.
4. Subtract vertically with the decimal points in line. $\begin{array}{r} 3.85 \\ -0.76 \\ \hline \end{array}$
3.09
5. $(-3)^4 = (-3)(-3)(-3)(-3) = 81$ remember an even number of negative numbers make a positive when their multiplied.
 $(-3)^4 (2) = (81)(2) = 162$.
6. Each whole foot has 12 inches so 3 feet = $3 \cdot 12 = 36$ inches plus $\frac{1}{2} \cdot 12 = 6$ inches. $36 + 6 = 42$ inches.
7. Convert the percent to a decimal form and multiply:
 $(.20)(60) = 12.00$

8. Because the fractions have like denominators, we can go ahead and add the numerators. $\frac{2}{11} + \frac{5}{11} = \frac{2+5}{11} = \frac{7}{11}$. This answer cannot be reduced.

9. First convert $3\frac{1}{2}$ to a improper fraction : $\frac{3 \cdot 2 + 1}{2} = \frac{7}{2}$
Cancel common factors then multiply the numerators and multiply the denominators: $\frac{7}{2} \cdot \frac{5}{7} = \frac{5}{2}$

10. Invert the 2nd fraction and multiply. $\frac{20}{12} \div 2 = \frac{20}{12} \cdot \frac{1}{2} = \frac{10}{12}$
which reduces to $\frac{5}{6}$.

Solutions to Numerical Skills Part II:

1) b 2) a 3) c 4) d 5) b 6) a 7) c 8) b
9) d 10) a