



Math Olympiad and Problem Solving Programs
E220 - Intermediate Math Competitions
Problem Set 28.1 - Number Sense

Name:

Date:

- $1(2 + 3) + 4 = \boxed{9}$
- $n! = (3!)(5!)(7!) = 2 \cdot 3 \cdot 2 \cdot 3 \cdot 4 \cdot 5 \cdot 7! = 7! \cdot (2 \cdot 4) \cdot (3 \cdot 3) \cdot (2 \cdot 5) = 7! \cdot 8 \cdot 9 \cdot 10 = 10!$ $\boxed{n = 10}$
- $\boxed{2}$
- $\sqrt{225 + 64} - \sqrt{147 - \sqrt{n}} = \sqrt{25} \Rightarrow 17 - \sqrt{147 - \sqrt{n}} = 5 \Rightarrow 12 = \sqrt{147 - \sqrt{n}} \Rightarrow 144 = 147 - \sqrt{n} \Rightarrow 3 = \sqrt{n} \Rightarrow \boxed{n = 9}$
- The smallest cube greater than 100 is 125. Let $k = 125$. Then $\sqrt[3]{k^2} = \sqrt[3]{125^2} = 125^{2/3} = (5^3)^{2/3} = 5^2 = \boxed{25}$
- Let $p = 59$ and $q = 43$. Both are prime, and their sum is 102. Then their difference is $\boxed{16}$
- The number is 3,193,193,193,195,762. The sum of the digits is $\boxed{72}$
- $\boxed{98634}$
- $\boxed{4}$
- $\boxed{23}$