



Math Olympiad and Problem Solving Programs

E220 - Intermediate Math Competitions

Problem Set 1.3 - Mathcounts Warm-Up 2 2008-2009

Name:

Date:

1. $\boxed{38}$
2. $\boxed{135}$
3. Prime factorize $7!$: $1 \times 2 \times 3 \times 4 \text{ times } 5 \times 6 \times 7 = 2 \times 3 \times 2^2 \times 5 \times 2 \cdot 3 \times 7 = 2^4 \times 3^2 \times 5 \times 7$.
There are two squared numbers: 3 and 4. So the greatest perfect square that is a factor of $7!$ is $2^4 \times 3^2 = (2^2 \times 3)^2 = (4 \times 3)^2 = \boxed{144}$.
4. $\boxed{\frac{1}{6}}$
5. Use the Venn Diagram principle we learned Week 1: $|A| = 152, |B| = 120, |A \cap B| = 46$. So $|A \cup B| = |A| + |B| - |A \cap B| = 152 + 120 - 46 = 226$. So the number of students who didn't have a dog or a cat is $300 - 226 = \boxed{74}$.
6. $\boxed{40}$
7. $\boxed{4}$
8. $100 \text{ cm} = 1 \text{ m}$. $1000 \text{ m} = 1 \text{ km}$. $\boxed{\frac{1}{25000}}$
9. $\boxed{10}$
10. $\boxed{41}$