



Math Olympiad and Problem Solving Programs
F130 - Advanced Problem Solving
Problem Set 7.1 - Pythagoras

Name:

Date:

1. $\boxed{1, 2, 4, 5, 10, 20, 25, 50, 100}$ $\boxed{10}$
2. $\boxed{10}$
3. $\boxed{13}$
4. (a) $\boxed{1, 3, 9, 27, 81}$
(b) $\boxed{1, 2, 4, 31, 62, 124}$
(c) $\boxed{1, 2, 19, 38}$
(d) $\boxed{1, 2, 4, 5, 8, 10, 20, 25, 40, 50, 100, 200}$
5. $72 = 2^3 \times 3^2$ has $(3 + 1) \times (2 + 1) = \mathbf{12}$ factors.
 $96 = 2^5 \times 3^1$ has $(5 + 1) \times (1 + 1) = \mathbf{12}$ factors.
So $\boxed{\text{Neither}}$ number has more factors.
6. (a) $\boxed{2016}$
(b) $\boxed{3768}$
(c) $\boxed{3750}$
(d) $\boxed{1152}$
7. $100 = 2^2 \times 5^2$ so its prime factors are 2 and 5. Their sum is $2 + 5 = \boxed{7}$.
8. $\boxed{3}$
9. $\boxed{23}$
10. $\boxed{36, 28}$