

P9-1



MEET 1 PYTHAGOREAN DIVISION NOV. 6, 1997

GRADE 9

SOLUTIONS

The answer to each question is in parenthesis at the beginning of each solution.

- 1) (b or sometimes) $7 > 6$ and $-2 > -3$ where $-14 > -18$. $10 > 6$ and $-2 > -3$ but $-20 < -18$.

- 2) (3 and -2) $(x+3)^{x-3} = 1$ when the exponent = 0 ($x = 3$) or when $x+3 = 1$ ($x = -2$).
 $[(x+3)^{x-2} = 1$ would have 3 solutions since the exponent is even when $x+3 = -1$.]

- 3) (b or $6\sqrt{2}$) The diagonal of the large square is $10\sqrt{2}$ (by the Pythagorean Theorem).
 The diagonal of the small square is $4\sqrt{2}$. $10\sqrt{2} - 4\sqrt{2} = 6\sqrt{2}$.

- 4) (6) $6S^2 = S^3$ when $S = 6$. For $S < 6$, the number of square units in the S.A. is greater than the number of cubic units in the volume.

- 5) (60) $ab \cdot bc \cdot ac = 10 \cdot 12 \cdot 30 = 3600$. $a^2b^2c^2 = 3600$; $abc = 60$. or; $\frac{ab}{ac} = \frac{10}{30} = \frac{1}{3}$.
 $c = 3b$; $3b^2 = 12$; $b = 2$. If $b = 2$, $c = 6$ and $a = 5$. $abc = 60$.

- 6) (31) Let $x =$ the number of kids ahead of John. $x =$ the number of kids behind John.
 Therefore, $x + 1 =$ the number of kids on the merry-go-round.
 $\frac{5}{6}x + \frac{1}{5}x = x + 1$; $x = 30$ and $x+1 = 31$ kids on the merry-go-round.