CML   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·bc·ac = 10·12·30 = 3600. $a^2b^2c^2 = 3600$;   abc = 60 .   or; $\dfrac{ab}{ac} = \dfrac{10}{30} = \dfrac{1}{3}$.

   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.

   $\dfrac{5}{6} x + \dfrac{1}{5} x = x + 1$;   x = 30 and x+1 = 31 kids on the merry-go-round.