

Problem 1. There are three hats with numbers 1, 2 and 3 written on them, and three balls also numbered 1, 2 and 3. In how many ways can one put the balls in the hats so that no ball gets into a hat with the same number? (One can put more than one ball into hats).



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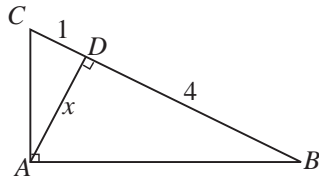
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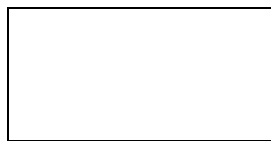
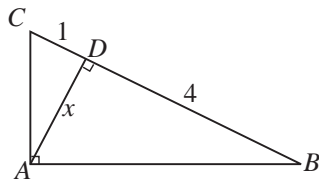
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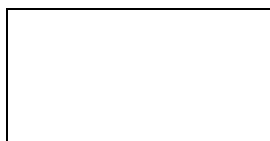
Problem 7. What is the radius of the smallest sphere containing the spheres with equations

$$x^2 + y^2 + z^2 = 1 \quad \text{and} \quad (x - 1)^2 + (y - 2)^2 + (z - 2)^2 = 4?$$



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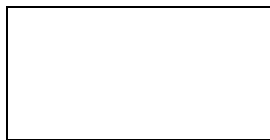
Problem 9. Determine the missing digit \diamond in the following mystery multiplication problem:

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 43??8? \\
 \times 756 \\
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