# Commentary
Jupiter, XIV

1. **(Charles was correct.)** The window "edges out" on the right hand side about half a square unit, and there are six of those square units on that side of the window. Therefore the area is 24 square units, plus the six extra half-squares, or 27 square units altogether. The picture is a little short of taking up the sixth square unit on the right-hand end. Measurement shows that it's about 1/5 of a square unit short on that side, and there are four such squares on that end. Therefore its area is four 1/5's short of being 24 square units. Charles desire to be an architect means that he will probably be quite exact in his measurements, as this problem shows.

2. **(32)** The 8 pigs were 1/4 of the total number of animals, since that is the amount left when 1/2 and 1/4 are combined and removed from 1. Then the total number of animals is 4 x 8 or 32.

3. **(a. 15; b. 30; c. 50)** For (a),59 - 32 = 27; 27 ÷ 9 = 3; 5 x 3 = 15. For (b), 86 - 32 = 54; 54 ÷ 9 = 6; 6 x 5 = 30. For (c), 122 - 32 = 90; 90 ÷ 9 = 10; 10 x 5 = 50.

4. **(140)** Students might get this by working backwards. To end up with 60 after multiplying by 5, you must have had 12 at the previous step. To have 12 after dividing by 9, you must have had 108 in the previous step. To have 108 after subtracting 32, you must have had 140 to begin.

5. **($4.25)** The 17 quarters would be $4.25.

6. **(a. 3/12 or 1/4 or 0.25 or 25%; b. 9/12 or 0.75 or 75%)** In (a), there are 3 months being considered out of twelve, so the chance is 3/12 you will get one of those. In (b), the chances are 9/12 since 9 months are being considered, out of 12.

7. **(c. 1000)** Students can partition the figure into smaller equal-sized pieces, count those, and gain an estimate by multiplying. The figure below has about 120 dots in the section that has been counted, and there are 8 such sections, resulting in 120 x 8 or 960 pots.
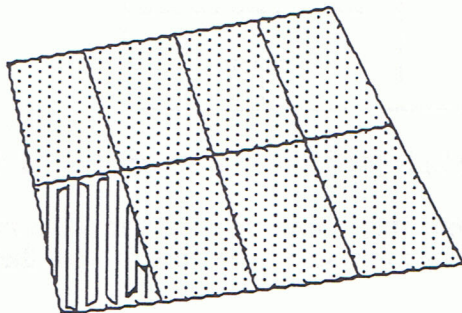
8. **(a. yes; b. yes; c. no; d. yes)** This problem will demonstrate that some students can translate a verbal situation into an equation, but others cannot.