

Commentary

Mars, XXV

1. (**■ is 3; ▲ is 6**) The student can use a *guess-and-check* strategy. If a 4 is used for the ■, then ▲ would also be 4 in the first sentence; but in the second sentence, $4 + 4 + 4 \neq 15$. If 5 is tried for ■ in the first sentence, then ▲ is 2 and the second sentence is again false: $5 + 5 + 2 \neq 15$. When 3 is tried as ■, then ▲ would be 6 from the first sentence, and the second sentence is then true: $6 + 6 + 3 = 15$.
2. (**a. 34; b. 5; c. 6**) In (a), the student might multiply to get the total for each animal, and then add: 5×2 plus 6×4 totals 34 legs. Another method is for the student to draw the animals as stick figures, and simply count the legs. Similar methods of drawing 26 legs, making 4 cows and counting the rest as chickens, will solve (b). Or the student might multiply 4×4 and subtract the total from 26 to get 10 legs left, and divide by 2 to have 5 chickens. Similar reasoning will produce the answer to (c).
3. (**accept 4 - 6 cm as a good estimate; 5 cm is the actual measurement**) Students should be encouraged to remember and use a “personal benchmark” for estimating common measures. For example, the width of their finger is about a centimeter. Extra practice using metric measure will make students better at estimating centimeters.
4. (**20**) Students might physically build this set of stairs, if they have trouble visualizing the hidden cubes. They can think of the shape as a set of layers, and count the cubes in each layer. The 4 cubes on top are easy to see and that should help the student visualize the cubes in the other 2 layers. That would give a total of $4 + 8 + 8 = 20$ cubes.
5. (**19, 17, 21**) Using addition and subtraction to find differences between terms, the repeated procedure of adding 6, then subtracting 2 will be discovered. Follow this procedure by adding 6 to 13; taking 2 from 19, adding 6 to 17, and then taking 2 from 23 for 21.
6. (**3; 2; 1**) Drawing the pie cut into 6 pieces is a natural way to begin this problem. Then $1/2$ of the pie is seen as 3 pieces. Then $1/3$ of the pie is 2 pieces and $1/6$ of the pie is 1 piece. For students who might need more than a drawing, encourage them to cut a circle from cardboard for the pie, divide it into 6 pieces, and use the physical model to find the answers.
7. (**a. 4/8 or 1/2**) The numbers above 4 are 5, 6, 7, and 8, which is 4 of the 8 sections.
(**b. 2/8 or 1/4**) The numbers above 6 are 7 and 8, which is 2 of the 8 sections.
(**c. 3/8**) The numbers below 4 are 1, 2, and 3, which is 3 of the 8 sections.
Note: Students should not be expected to find the lowest terms fraction.
8. (**Rectangles of 2 x 12; 3 x 8; and 4 x 6**) The 1×24 rectangle with this same area cannot be drawn on this grid. Arrangements will differ from that shown below..

Areas of 24 squares

