

Mathematics, Grade 8

- 37 Which of the following describes one way to solve this equation?

$$12 - 3x = 5$$

- A. Add $3x$ to both sides, then divide both sides by 3.
- B. Subtract $3x$ from both sides, then multiply both sides by 3.
- C. Add 12 to both sides, then multiply both sides by -3 .
- D. Subtract 12 from both sides, then divide both sides by -3 .

Reporting Category for Item 37: Patterns, Relations, and Algebra (p. 286)

Session 3, Open-Response Questions

- 38 Ms. McCarthy's class is making up number puzzles. These are two of the puzzles.

Manuel's puzzle:

My number is even.
It is a factor of 198 and a multiple of 9.
It is less than 100.
What is my number?

Haan's puzzle:

My number is the product of three different prime numbers.
It is an odd number less than 125.
The sum of its digits is a multiple of 3.
One of its factors is the third prime number.
What is my number?

- a. What is Manuel's number?
- b. What is Haan's number? Explain the strategy you used to find your answer to Haan's puzzle.
- c. Write a number puzzle that
 - has exactly **three** clues,
 - has **one and only one** answer, and
 - includes the following words: **factor** and **prime number**.

Reporting Category for Item 38: Number Sense and Operations (p. 285)

Mathematics, Grade 8

- 39 Some eighth-grade students want to raise at least \$300 for a field trip by selling popcorn and fruit bars. The chart below shows the amount of profit they will make on each sale.

Profit from Sales

Box of popcorn	60¢
Fruit bar	30¢

- If they sell exactly 500 fruit bars, how many boxes of popcorn will they need to sell to make a total of \$300?
- On the grid in your Student Answer Booklet, draw a graph showing the combinations of boxes of popcorn and fruit bars they must sell to make a total of exactly \$300. Let the horizontal axis represent the number of fruit bars. Label that axis to 1,000. Show or describe the calculations you used to find the data points for your graph.
- Based on last year's sales, the students will probably not be able to sell more than 600 fruit bars. **Using your graph**, explain how you can find the number of boxes of popcorn the students must sell to make a total of \$300 if they sell exactly 600 fruit bars. How many boxes of popcorn must they sell?

Reporting Category for Item 39: Patterns, Relations, and Algebra (p. 286)