Beginning-Of-Course Diagnostic Test
## *Incoming 8th Grade*

1. Estimate the sum of $14.30, $143.08, and $19.74 by rounding.

2. Divide $\frac{2}{5} \div \frac{1}{8}$. Write the answer in simplest form.

3. Paul, Steve, Robin, and Ryan all play different instruments. Their instruments are guitar, bass guitar, piano, and drums. Robin's instrument is not a string instrument. Paul does not play bass guitar or piano. Ryan's instrument has only four strings. Which instrument does each play?

4. Find the perimeter.

9 cm, 15 cm, 12 cm
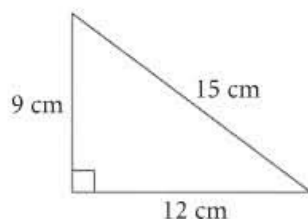
5. Write five equivalent fractions for $\frac{7}{8}$.

6. Find three consecutive even integers whose sum is 180.

7. Use a factor tree to write the prime factorization of 430.

8. Write 3.04 as a percent.

9. This week Lera withdrew $150 from her checking account. She wrote a check for $275, made a deposit of $200, and then wrote another check for $75. She now has $185 in her account. How much did Lera have in her account at the beginning of the week?

10. Find the GCF of 15 and 27.

11. Write 3.1818... as a fraction in simplest form.

12. Find a four digit number that is divisible by 3, 5, and 8.

13. Graph the image of $\triangle ABC$ after a translation of 3 units left and 2 units up.
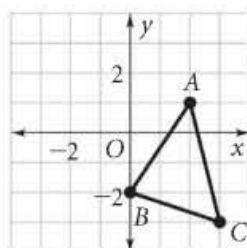

14. Subtract $6\frac{3}{4} - 4\frac{11}{12}$. Write the answer in simplest form.

15. Troy is writing a book of short stories. It is his goal to write one short story this month, two short stories next month, three short stories the following month, and so on for 13 more months. How many stories will he have written at the end of sixteen months?
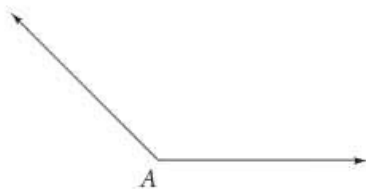
16. Find the volume of the following figure. Use 3.14 for π.

9 in.

6 in.
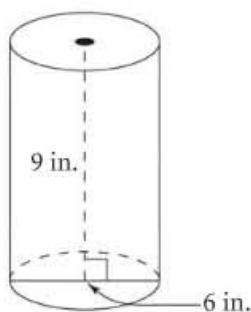
17. Find the LCM of 15 and 27.

18. Graph the triangle with vertices $A(-1, 3)$, $B(-3, -2)$, $C(0, -1)$. Then graph its image after a reflection across the y-axis.

19. Use a protractor to measure the angle and classify it as *acute, right, obtuse,* or *straight.*

A

20. Multiply $4\frac{2}{5} \cdot 5\frac{1}{6}$. Write the answer in simplest form.

21. Draw a line plot for the frequency table.

Number	8	9	10	11	12
Frequency	3	4	6	2	1

22. When seating guests at a round table, two arrangements are considered the same if each person has the same neighbor to the left and to the right in each arrangement. Find the number of unique arrangements when seating 2, 3, and 4 guests at a round table. Use these results and the fact that 24 unique arrangements are possible when seating 5 guests to find the number of unique arrangements when seating 6 guests.

23. Write 3624 in expanded form using exponents.

24. There are 20 guests at a party. If each person shakes hands with every other person exactly once, how many total handshakes will occur?

25. Write $6^2 \cdot 3^3$ in standard form.