*Numbers that are NOT rational are called irrational.

*Whole numbers, integers, and fractions are all rational.

*Irrational numbers include π, the square roots of numbers that are not squares, and the cube roots of numbers that are not cubes.

*Every number has a decimal expansion. The decimal expansions of rational numbers either **terminate** in zeros or **repeat**.

*The decimal expansions of irrational numbers continue forever with **no repeating pattern**.

8th Grade YEAR REVIEW: RATIONAL/IRRATIONAL NUMBERS

Convert the fraction to a decimal by dividing the numerator by the denominator. Use bar notation to write repeating decimals.

1. $\frac{9}{11} = 11\overline{)9}$

Decimal: _____

2. $\frac{11}{12} = 12\overline{)11}$

Decimal: _____

3. $\frac{7}{12} = 12\overline{)7}$

Decimal: _____

4. $\frac{8}{11} = 11\overline{)8}$

Decimal: _____

Determine if the square root is a rational or irrational number. Explain your reasoning. HINT: Change it to a decimal!!!

5. $\sqrt{49}$

Rational   OR   Irrational

WHY??? _____

_____

6. $\sqrt{61}$

Rational   OR   Irrational

WHY??? _____

_____

7. $\sqrt{101}$

Rational   OR   Irrational

WHY??? _____

_____

8. $\sqrt{6.76}$

Rational   OR   Irrational

WHY??? _____

_____

9. $\sqrt{17.64}$

Rational   OR   Irrational

WHY??? _____

_____

10. $\sqrt{24}$

Rational   OR   Irrational

WHY??? _____

_____

11. How many decimal places does an irrational number have?

   a.   zero
   b.   one
   c.   infinite
   **d.**   between one and ten

12. Which fraction, when converted, is a repeating decimal?

   a. $\dfrac{3}{8}$

   b. $\dfrac{11}{25}$

   c. $\dfrac{2}{5}$

   d. $\dfrac{5}{7}$

13. Carl and Joe recorded how fast they ran 1 mile and 2 miles. Carl recorded his times using fractions, and Joe recorded his times using decimals.

| Distance	Carl	Joe
1 mile	$10\frac{1}{2}$ minutes	10.4 minutes
2 miles	$22\frac{1}{4}$ minutes	22.3 minutes

   a.   Write $10\frac{1}{2}$ as a decimal.

   b.   Write $22\frac{1}{4}$ as a decimal.

   c.   On the number line shown, graph Carl's time and Joe's time for 1 mile.
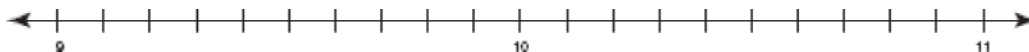
   d.   Use the number line to determine who ran 1 mile faster. Write your answer using a complete sentence.

ANSWER:_____

   e.   On the number line shown, graph Carl's time and Joe's time for 2 miles.
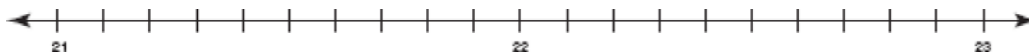
   f.   Use the number line to determine who ran 2 miles faster. Write your answer using a complete sentence.

ANSWER:_____