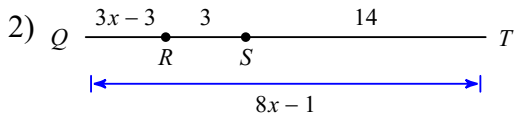


2.3 ~ Reasoning in Algebra

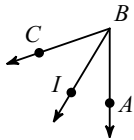
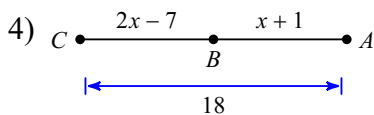
Past due on _____ Period _____

ALL PROOFS SHOULD BE DONE ON PROOF PAPER.**Write a two-column, algebraic proof.**

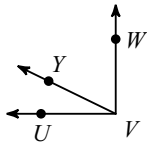
1) $159 = b + 4(1 - 8b)$

Write a two-column proof. Use the Segment Addition Postulate to prove that $x = 3$.**Write a two-column proof. Use the Angle Addition Postulate to prove that $x = 9$.**

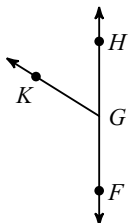
3) $m\angle ABI = 4x - 5$, $m\angle IBC = 3x + 13$,
and $m\angle ABC = 71^\circ$. Find x .

**Write a two-column proof. Use the Segment Addition Postulate to prove that $x = 8$.**5) Is B the midpoint of \overline{CA} ? Explain your reasoning.**Write a two-column proof. Use the Angle Addition Postulate to prove that $x = 11$.**

6) $m\angle UVY = 26^\circ$, $m\angle UVW = 7x + 13$,
and $m\angle YVW = 5x + 9$. Find x .

7) Is $\angle UVY$ complementary to $\angle YVW$?
Explain your reasoning.**Write a two-column proof. Use the Angle Addition Postulate to prove that $x = 12$.**

8) $m\angle FGK = 122^\circ$, $m\angle FGH = 15x$,
and $m\angle KGH = 5x - 2$. Find x .

9) Is $\angle FGK$ supplementary to $\angle KGH$?
Explain your reasoning.

SPIRAL REVIEW

Find a counterexample to show that each conjecture is false.

10) $\angle 1$ and $\angle 2$ are supplementary, so one of the angles is acute.

11) When you multiply a number by 3, the product is divisible by 6.

Use inductive reasoning to find a pattern for each sequence. Use deductive reasoning to find the next two terms.

12) 1, 3, 7, 13, 21, ...

13) 1, 2, 6, 24, 120, ...

Consider the conditional statement: If two lines lie in the same plane, then they are coplanar.

14) Write the inverse of the conditional statement.

15) Write the converse of the conditional statement.

16) Write the contrapositive of the conditional statement.

Find the measure of $\angle A$ and $\angle B$.

17) $\angle A$ is half as large as its complement $\angle B$

18) $\angle A$ is twice as large as its supplement $\angle B$

19) What is the measure of an angle with a supplement that is four times its complement?

20) The sum of the measures of the complement and the supplement of an angle is 114. What is the measure of the angle?

21) Given: $\angle 1$, $\angle 2$, $\angle 3$, and $\angle 4$ are supplementary.

If $m\angle 1 = \frac{1}{2}m\angle 2$, $m\angle 2 = \frac{2}{3}m\angle 3$, and $m\angle 3 = 72^\circ$, what is $m\angle 4$?