**SHOW WORK ON EACH PROBLEM!**
**EACH ANSWER SHOULD BE FULLY SIMPLIFIED**

****All concepts on this worksheet are prerequisite knowledge from middle school math and Algebra. You are expected to know them without review the first day of class.**

****You should bring this completed worksheet with you the first day of class. If you should need another copy, you can find it on the Westlake High Website. There may be a quiz on this material the first week of classes.**

**** Show all work.**

I. Simplify each expression:

1) $5 + (16 + 2) \div 3$

Answer:

2) $-4 - (1 - 5) - (-4)^2$

Answer:

3) $(4 - 3)(1 - (3 + 5)) \times 5$

Answer:

4) $4a - 2(b + a) - (3b)^2$

Answer:

5) $2 - (3x + 5) - 4^2 + x$

Answer:

6) $[2 - 4(n^2 - n)] \div (2n + 1)$

Answer:

II. Simplify each radical expression.

1) $3\sqrt{6} - 4\sqrt{6}$

Answer:

2) $-2\sqrt{3} + 3\sqrt{27}$

Answer:

3) $3\sqrt{18} - 2\sqrt{2}$

Answer:

4) $\sqrt{24x^2y^5z^6}$

Answer:

5) $\sqrt{3}\,(\sqrt{15} + \sqrt{20})$

Answer:

6) $\sqrt{\frac{490}{10}}$

Answer:

III. Factor. If not factorable, write prime.

1) $2p^2 + 2p - 4$

Answer:

2) $n^2 - 11n + 10$

Answer:

3) $9k^2 + 66k + 21$

Answer:

4) $6x^2 - 4x - 8$ 5) $9r^2 - 48r + 64$ 6) $5m^2 - \frac{5}{4}$

Answer: Answer: Answer:

IV. Solve each equation.

1) $-20 = -4x - 6x$ 2) $8p - 5(p + 3) = (7p - 1)3$ 3) $p - 1 = 5p + 3p - 8$

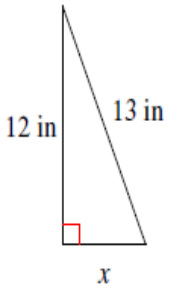
Answer: Answer: Answer:

4) $2x^2 + 5x + 3 = 0$ 5) $3x^2 + 2x = 5$ 6) $x^2 - 6x = 2$

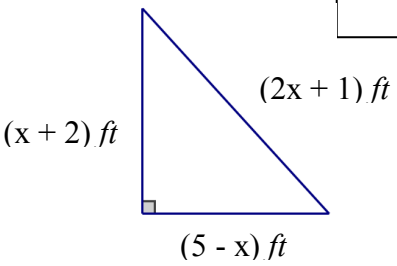
Answer: Answer: Answer:

V. Find the missing value. Leave in simplest radical form.

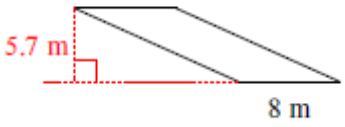
1) x =



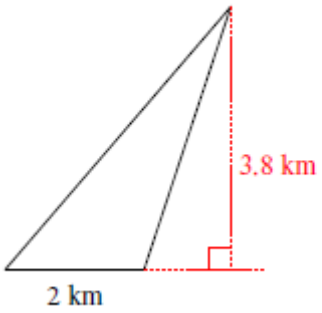

2) x =



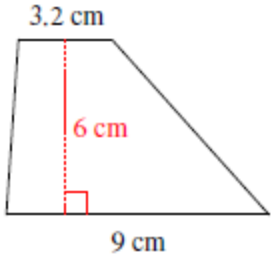

VI. Find the area of each polygon.


1) Area= 2) Area=




3) Area=




4) Area=

VII. For each problem
a) find the slope b) write the equation in slope intercept form c) write the equation in standard form.

1) (0.5, -0.7) and (0.4, 1.2) 2) (-3,2) and (-3, 7) 3) $(\frac{7}{2}, \frac{3}{4})$ and $(\frac{9}{2}, \frac{1}{8})$

| Slope:<br>S-I form:<br>Std form: | Slope:<br>S-I form:<br>Std form: | Slope:<br>S-I form:<br>Std form: |
|---|---|---|

VIII. Find the midpoint.

1) (-3,2) and (-3, 7) 2) (0.5, -0.7) and (0.4, 1.2) 3) $(\frac{7}{2}, \frac{3}{4})$ and $(\frac{9}{2}, \frac{1}{8})$

| Midpoint: | Midpoint: | Midpoint: |
|---|---|---|

IX. Find the distance between the points. Leave in simplest radical form.

1) (5, -7) and (4, 12) 2) (-3,2) and (-3, 7) 3) $(\frac{1}{2}, \frac{1}{2})$ and $(\frac{7}{2}, \frac{9}{2})$

| Distance: | Distance: | Distance: |
|---|---|---|

VIII. Find the slope given the equation of the line.

1) $y = 3x + 2$ 2) $x + y = 2$ 3) $2x + 2y = 4$

| Slope: | Slope: | Slope: |
|---|---|---|

IX. Find the slope of the line parallel and perpendicular to the given line.

1) $y = \frac{2}{3}x + 3$ 2) $3x + 4y = 8$ 3) $7x + 3y = 14$

| ∥ Slope:<br>⊥ Slope: | ∥ Slope:<br>⊥ Slope: | ∥ Slope:<br>⊥ Slope: |
|---|---|---|

X. Solve the system to find the intersection of the two lines.

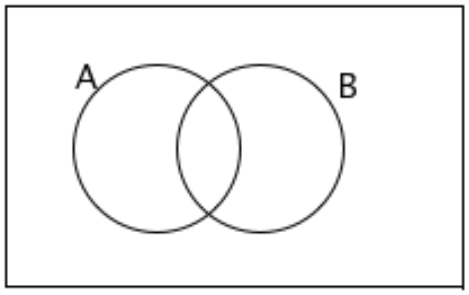
1) $\begin{cases} 4x - 2y = -14 \\ 3x - y = -8 \end{cases}$ 2) $\begin{cases} x - 3y = -4 \\ 2x + 6y = 5 \end{cases}$ 3) $\begin{cases} \frac{x}{3} - y = 3 \\ 2x + y = 25 \end{cases}$

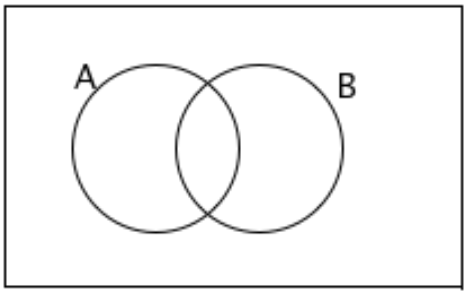
| Solution: | Solution: | Solution: |
|---|---|---|

XI. Answer the following questions about Venn Diagrams.

1) Shade the region representing:

a) in A but not in B b) neither in A nor B.



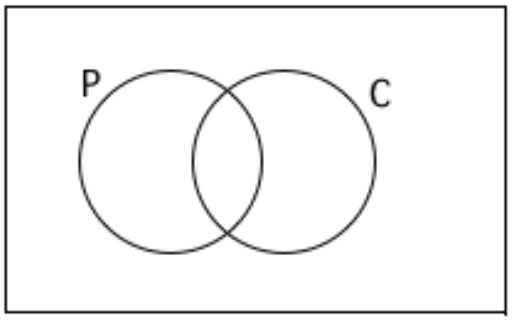
2) In a class of 30 students, 19 study Physics, 17 study Chemistry and 15 study both of these subjects. Display this information on a Venn diagram and determine the probability that a randomly selected class member studies:

a) both subjects

b) at least one of the subjects

c) Physics, but not Chemistry

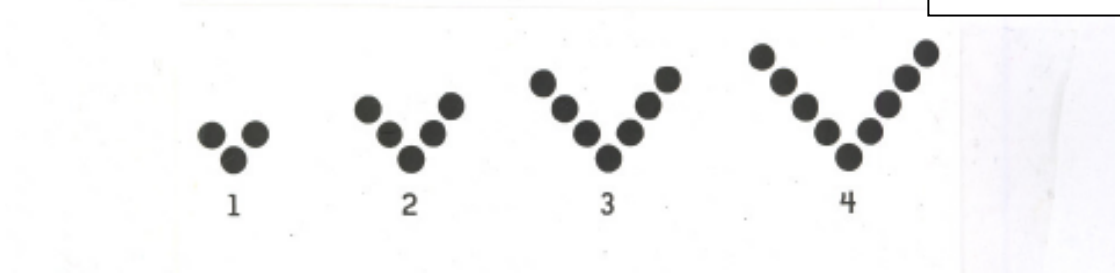
d) Exactly one of the subjects




e) Neither subject

XII. Answer the following questions regarding patterns and sequences.

1) Analyze the pattern below. How would you know the total number dots in the 10th step?




Use the pattern below for questions 2 -4.

3, 8, 13, 18, 23…

2) What are the next two terms in the sequence?

3) Create a table to determine the algebraic expression for this sequence.

| | |
|---|---|
| | |
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| | |

4) What would the 20th term be in this sequence?

5) The bells at Westlake High School ring at 7:55, 8:40, 9:25, 10:10. Explain how you can find when the next bell will ring.

XIII. Answer the following logic problems.

1) Two fathers took their sons fishing.
Each person caught one fish but when they returned to camp there were only 3 fish. How is this possible?

2) Every Halloween, the Winchester family host their annual Halloween Pumpkin Pie Bake Off. However, this year a rotten thief has stolen and hidden away the prized pumpkin pie!

Detectives come and narrow it down to five suspects: Bobby, Sam, Dean, Ellen and Jo.

Under questioning, each suspect makes two statements. Using police intuition, the detectives realize for each suspect, exactly one of their statements is true and one of their statements is a lie.

| | | | | | |
|---|---|---|---|---|---|
| Dean: | It was Sam<br>It wasn't Ellen. | Jo: | It was Dean<br>It was Bobby. | Sam: | It was Jo<br>It wasn't Ellen |
| Ellen: | It wasn't Sam<br>It was Bobby | Bobby: | It wasn't Sam<br>It wasn't Dean | | |

Who is the pie thief? (Give your reasoning)