

Name _____ Teacher last year: _____

Robinson Secondary School Algebra 1 Summer Mathematics Packet

Dear Students and Parents: The purpose of this packet is to review algebra concepts as you look forward to Algebra 1 Honors next year at Robinson. Please show all your work for each problem on separate paper. Please put your final answer on the answer sheet. You may use a calculator for every section except part 1. This packet will be due the first week of school in September. The second week in September there will be a quiz on this material.

Part 1. Operations with real numbers

Order of Operations—Simplify each of the following mathematical expressions. These should be done without a calculator.

1) $14 \div 7 + 3^2$ 2) $42 \div 2(-12 + 9)$ 3) $\sqrt{49}$ 4) $|-14|$

5) $18 - 30 \div 5$ 6) $48 \div (5 + 7) - 9$ 7) $4^3 - 5(2) + 13$

Adding/Subtracting/Multiplying/Dividing Positive and Negative Numbers-- This is also done without a calculator.

8) $-2 + 11 - 7$ 9) $5 - 3 + 12 - 9$ 10) $\frac{-4}{\left(\frac{3}{4}\right)}$

11) $(-2)(4)(-5)(-1)$ 12) $-4 + -9 -3(-6)$ 13) $\left(\frac{3}{5}\right)\left(-\frac{7}{12}\right)$

14) $\frac{3}{4} + \frac{1}{6}$ 15) $2\frac{1}{3} - \frac{7}{9}$ 16) $\left(\frac{2}{3}\right) \div \left(1\frac{5}{9}\right)$

Evaluating Expressions – no calculator

17) $3(n - 1) + 2n$, when $n = 5$ 18) $7b - 2a$, when $a = -3$ and $b = 4$

19) $3x^2 + 5x + 1$, when $x = -2$ 20) $\frac{2r}{t} + 7$, when $r = 12$ and $t = 3$

21) $(3x)^2 - 7y^2$, when $x = 3$ and $y = 2$ 22) $4(3d + 6) - 2d$, when $d = -6$

Part 2: Solving equations

Here are some examples:

$\begin{array}{r} -2y + 9 = 7 \\ \underline{-9 \quad -9} \\ -2y = -2 \\ \underline{-2 \quad -2} \\ y = 1 \end{array}$	$\begin{array}{r} 2x + 3 = x + 10 \\ \underline{-3 \quad -3} \\ 2x = x + 7 \\ \underline{-x \quad -x} \\ x = 7 \end{array}$	$\begin{array}{r} 3b + 2 = 6(3 - b) \\ 3b + 2 = 18 - 6b \\ \underline{-2 \quad -2} \\ 3b = 16 - 6b \\ \underline{+6b \quad +6b} \\ 9b = 16 \\ \underline{9 \quad 9} \\ b = 16/9 \end{array}$
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Solve the equation.

23) $14 = b + 5$

24) $5r = 22$

25) $\frac{x}{4} = -9$

26) $3x - 5 = 13$

27) $\frac{1}{4}d + 2 = 3$

28) $-21 - 5x = 64$

29) $3y + 2y = 81 - 6$

30) $18y - 21 = 15y + 3$

31) $\frac{2a}{7} = \frac{2}{3}$

32) $2x - 10 + 2 = 12$

33) $3(y - 4) = -2y - 12$

34) $\frac{4x}{7} = \frac{6}{5}$

Part 3: Properties

Properties

Match each equation on the left with the property it illustrates on the right.

35) $4 + (9 + 6) = (4 + 9) + 6$

A. Identity property of multiplication

36) $x + 12 = 12 + x$

B. Associative property of addition

37) $(3 + y) + 0 = 3 + y$

C. Distributive Property

38) $x \cdot 1 = x$

D. Identity property of addition

39) $5(x + y) = 5x + 5y$

E. Commutative property of addition

Distributive Property

Simplify each expression using the distributive property.

Example: $4(x + 5) = 4(x) + 4(5) = 4x + 20$

40) $3(b + 9)$

41) $5(2x - 3)$

42) $-3(4x + 9)$

43) $x(2x + 4)$

44) $\frac{1}{2}(4r + 12)$

45) $-(6p - 11)$

Part 4: Subsets of real numbers and number sense

46) List all the perfect squares between 1 and 250

47) What is the smallest prime number? The smallest composite number?

48) List 4 factors of 24. List 4 multiples of 24.

49) Are both 7 and $-\frac{1}{2}$ integers? Why or why not?

50) Are both 7 and $-\frac{1}{2}$ rational numbers? Why or why not?

51) Round 43.77301 to the nearest hundredth.

52) Round -5.1982569 to the nearest hundredth.

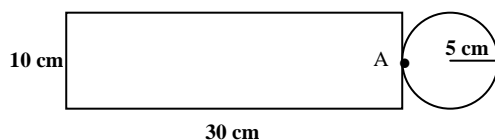
Part 5: Problem solving

You may use a method of your choice, but must show organized work for these problems.

53) A group of runners participated in a 10-kilometer race. One-eighth of the runners completed the race in 40 minutes or less. Seven-twelfths of the runners needed between 40 minutes and one hour to finish. The remaining 70 runners took one hour or longer to complete the race. How many runners participated in the race?

54) A cylindrical water tank has a diameter of 20 feet and a height of 25 feet. If a cubic foot holds about 7.48 gallons of water, how many gallons of water, to the nearest gallon, will the tank hold? ($V = \pi r^2 h$)

55) How many times would point A touch the rectangle if it were rolled completely around the rectangle?



Part 6: Self assessment

For each statement below, answer Yes, No, or Not Sure, whichever is closest to your ideas about your own work in math. There is no right answer. Please answer as honestly as possible. Add comments if you wish.

1. I like math because I can figure things out. _____
2. The harder the problems, the better I like to work on them. _____
3. I usually give up when a problem is really hard. _____
4. I think math is not really useful in everyday living. _____
5. I liked mathematics when I was younger, but now it's too hard. _____

Put an X on in the box where you think you belong:

I am not good at
mathematics.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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I am good at
mathematics.

Here are some websites you might find useful in completing your summer assignment.

1. <http://www.regentsprep.org> – use the Math A site
2. <http://www.math.com> – use both Algebra and Pre-Algebra
3. [http:// library.thinkquest.org](http://library.thinkquest.org)
4. http://www.mathgoodies.com/lessons/toc_vol5.html – there are others on here, but this is the integer site
5. http://www.teacherschoice.com.au/Maths_Library/Algebra/Alg_1.htm
6. <http://education.jlab.org/solquiz>
7. http://w3.fiu.edu/math/cine_math/fast/pie.htm -- solving equations
8. <http://www.algebrahelp.com/worksheets/>
9. <http://regentsprep.org/Regents/math/math-topic.cfm?TopicCode=solveq>
10. <http://www.math.com/homeworkhelp/Algebra.html>
11. <http://www.regentsprep.org/Regents/math/orderop/orderPrac.htm>
12. <http://www.regentsprep.org/Regents/math/orderop/evalPrac.htm>
13. <http://www.math.com/homeworkhelp/PreAlgebra.html>

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