

All questions should be submitted by 4pm on **Thursday** April 1st. Assignments can be submitted at your tutorial, or to the MATH1040/7040 assignment boxes (4th floor Priestley Building #67). **Make sure that your name, student number, tutorial group and your tutor's name are on each sheet of your answers.** You do not need a cover sheet nor do you need to include the question sheet. Solutions will be distributed in class later.

1. Answer each of the following questions, showing all working.

(a) Expand $-5z(-6 + 2z)$

(b) Expand and simplify $(-6 + 7x)(3 - 6x)$

(c) Let $z = 2$. Find x , if $z = 4x - 3$

(d) Evaluate x , if $-4x - 6 = 0$

(e) Evaluate x , if $\frac{-4x}{2} - 6 = 2$

(f) Evaluate x , if $-4 + \frac{-4}{-4x} = 2$

(g) Evaluate z , if $z = \frac{-11}{3} \times \frac{13}{5}$

(h) Evaluate z , if $6 = 4z + 4$

(i) Evaluate x , if $|5x + 5| = 1$

(j) What two consecutive integers add together to give 15? Use algebra to solve. (Hint: let the first number be x .)

(k) Evaluate x if $\sqrt{128x} = 4\sqrt{8}$

(l) Evaluate x if $\sqrt{45} = x\sqrt{5}$

(m) Expand and simplify $\sqrt{2}(\sqrt{5} + \sqrt{4})$

(n) Expand and simplify $(\sqrt{6} + \sqrt{6})(\sqrt{8} + \sqrt{6})$

2. Simplify the following:

(a) $y^{-2}y^{-3}x^2y^{-3} \div x^{-1} \times y^{-2}$

(b) $\frac{-5y^4y^4}{y^{-3}y^{-5}}$

3. Answer each of the following questions.

(a) Write $x < 6.6$ in interval form and mark it on a real line.

(b) Write the interval $[9, 11)$ using an inequality sign and mark it on a real line.

(c) Solve $8x - 6 \geq 4x - 10$, then write your answer in interval format and mark it on a real line.

4. Mayumi ate x pieces of sushi on her birthday. Rumi ate 4 more pieces than Mayumi. Together they ate a total of 26 pieces. Write an equation to find out how many pieces of sushi each person ate, and solve this equation.

5. Two hospitals have a total of 204 doctors. The number of doctors in one hospital is 20 less than three times the number of doctors in the other. Write an equation to work out how many doctors there are in each hospital, and solve this equation.

6. Write down the following expression: start with x , square it and add this to x . Divide all of this by x , then subtract 16. Subtract x , then divide everything by 3. What number do you get, regardless of what x is? Why? Show all working.

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