

## Algebra practice!

The questions on this sheet all have to do with collecting terms, multiplying expressions, solving equations, substituting into formulas and cancelling algebraic fractions - material we have covered in the last few sessions. Harder questions are marked with \* and won't be found on tests!

- 1) Solve  $3x + 2 = 17$
- 2) Simplify  $3p + 4q + p + 2q$
- 3) Simplify  $4x \times 3y$
- 4) Simplify  $\frac{4x^2}{2x}$  to lowest terms
- 5) Solve  $x^2 = 16$ . How many solutions does this equation have?
- 6) Simplify  $12x + 15y - 9x + 5y$
- \*7) Can you find all the common factors of the following terms  
 $12xy^2, 15x^2y, 18x^2y^2$
- 8) Simplify  $2y + 7 - 5y + 12$
- 9) Work out the value of  $y$  when  $x = 16$  using the formula  
 $y = \sqrt{x} + 5$
- 10) Solve  $4x + 5 = 29$ . Try to show each step in your solution.
- \*11) Two whole numbers add up to give 13 and multiply to give 42. What could the numbers be?
- 12) Solve  $\frac{x}{4} = 10$

- 13)  $X = 10$  and  $Y = 7$ . Find the value of  $3x + 4y$
- 14)  $A = 3.142 \times R^2$ . Find the value of  $A$  when  $R = 20$

Answers

$$1) \begin{array}{r} 3x + 2 = 17 \\ -2 \quad -2 \\ \hline \end{array}$$

$$\frac{3x}{3} = \frac{15}{3}$$

$$x = 5$$

$$2) 4p + 6q \quad 3) 12xy \quad 4) \frac{4xx}{xx} = 2x$$

$$5) x^2 = 16$$

$$\sqrt{x^2} = \sqrt{16}$$

$$x = 4$$

but also  $-4 \times -4 = 16$

7)  $3xy$  is the common factor

$$8) -3y + 19 \text{ or } 19 - 3y$$

$$9) y = \sqrt{16} + 5 = 4 + 5 = 9$$

(note the +5 isn't inside the  $\sqrt{\quad}$ )

$$10) \begin{array}{r} 4x + 5 = 29 \\ -5 \quad -5 \\ \hline \end{array}$$

$$\frac{4x}{4} = \frac{24}{4}$$

$$x = 6$$

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$$12) \frac{x}{4} = 10 \text{ so } x = 40$$

$$13) 3 \times 10 + 4 \times 7 = 30 + 28 = 58$$

$$14) A = 3.142 \times 20^2$$

$$= 3.142 \times 400$$

$$= 314.2 \times 4$$

$$= 1256.8 \text{ cm}^2$$

$$\approx 1260 \text{ cm}^2 \text{ (3sf)}$$

(And I didn't even use a calculator)