Review of Simple Linear Eqns

Ex1

$$2x + 7 = 15$$
$$2x = 15 - 7$$
$$2x = 8$$
$$x = \frac{8}{2}$$
$$\underline{x = 4}$$

Ex 2

$$3x - 1 = 14$$
$$3x = 14 + 1$$
$$3x = 15$$
$$x = \frac{15}{3}$$
$$\underline{x = 5}$$

Exercise

1)

$$5x - 7 = 13$$
$$5x = 13 + 7$$
$$5x = 20$$
$$x = \frac{20}{5}$$
$$\underline{x = 4}$$

2)

$$4x + 5 = 29$$
$$4x = 29 - 5$$
$$4x = 24$$
$$x = \frac{24}{4}$$
$$\underline{x = 6}$$

3)

$$2x - 8 = 10$$
$$2x = 10 + 8$$
$$2x = 18$$
$$x = \frac{18}{2}$$
$$\underline{x = 9}$$

4)

$$10x + 7 = 57$$
$$10x = 57 - 7$$
$$10x = 50$$
$$x = \frac{50}{10}$$
$$\underline{x = 5}$$

Further Examples

1) $3x + 2 = 19$

$3x = 19 - 2$

$3x = 17$

$x = \frac{17}{3}$

$x = 5\frac{2}{3}$

2) $5x + 20 = 12$

$5x = 12 - 20$

$5x = -8$

$x = -\frac{8}{5}$

$x = -1\frac{3}{5}$

Exercise

1) $2x - 10 = 17$

$2x = 17 + 10$

$2x = 27$

$x = \frac{27}{2}$

$x = 13\frac{1}{2}$

2) $7x + 5 = 28$

$7x = 28 - 5$

$7x = 23$

$x = \frac{23}{7}$

$x = 3\frac{2}{7}$

3) $4x + 11 = 2$

$4x = 2 - 11$

$4x = -9$

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

$x = -2\frac{1}{4}$

4) $10x + 30 = 17$

$10x = 17 - 30$

$10x = -13$

$x = -\frac{13}{10}$

$x = -1\frac{3}{10}$

EXERCISE 5E

C

Solve these equations.

1. $\frac{f}{5} + 2 = 8$
2. $\frac{w}{3} - 5 = 2$
3. $\frac{x}{8} + 3 = 12$
4. $\frac{5t}{4} + 3 = 18$
5. $\frac{3y}{2} - 1 = 8$
6. $\frac{2x}{3} + 5 = 12$
7. $\frac{t}{5} + 3 = 1$
8. $\frac{x+3}{2} = 5$
9. $\frac{t-5}{2} = 3$
10. $\frac{x+10}{2} = 3$
11. $\frac{2x+1}{3} = 5$
12. $\frac{5y-2}{4} = 3$
13. $\frac{6y+3}{9} = 1$
14. $\frac{2x-3}{5} = 4$
15. $\frac{5t+3}{4} = 1$

3) $\frac{x}{8} + 3 = 12$

$\times 8$ $x + 24 = 96$

$x = 96 - 24$

$x = 72$

6) $\frac{2x}{3} + 5 = 12$

$\times 3$ $2x + 15 = 36$

$2x = 36 - 15$

$2x = 21$

$x = \frac{21}{2}$

$x = 10\frac{1}{2}$

9) $\frac{t-5}{2} = 3$

$\times 2$ $t - 5 = 6$

$t = 6 + 5$

$t = 11$

12) $\frac{5y-2}{4} = 3$

$\times 4$ $5y - 2 = 12$

$5y = 12 + 2$

$5y = 14$

15) $\frac{5t+3}{4} = 1$

$\times 4$ $5t+3 = 4$

$5t = 4-3$

$5t = 1$

$t = \frac{1}{5}$

$y = \frac{14}{5}$

$y = 2\frac{4}{5}$

Classwork

1 $\frac{f}{5} + 2 = 8$

$\times 5$ $f + 10 = 40$

$f = 40 - 10$

$f = 30$

2 $\frac{w}{3} - 5 = 2$

$\times 3$ $w - 15 = 6$

$w = 6 + 15$

$w = 21$

4 $\frac{5t}{4} + 3 = 18$

$\times 4$ $5t + 12 = 72$

$5t = 72 - 12$

$5t = 60$

$t = \frac{60}{5}$

$t = 12$

5 $\frac{3y}{2} - 1 = 8$

$\times 2$ $3y - 2 = 16$

$3y = 16 + 2$

$3y = 18$

$y = \frac{18}{3}$

$y = 6$

7 $\frac{t}{5} + 3 = 1$

$\times 5$

$t + 15 = 5$

$t = 5 - 15$

$t = -10$

8 $\frac{x+3}{2} = 5$

$\times 2$

$x + 3 = 10$

$x = 10 - 3$

$x = 7$

10 $\frac{x+10}{2} = 3$

$\times 2$

$x + 10 = 6$

$x = 6 - 10$

$x = -4$

11 $\frac{2x+1}{3} = 5$

$\times 3$

$2x + 1 = 15$

$2x = 15 - 1$

$2x = 14$

$x = \frac{14}{2}$

$x = 7$

13 $\frac{6y+3}{9} = 1$

$\times 9$

$6y + 3 = 9$

$6y = 9 - 3$

$6y = 6$

$y = \frac{6}{6}$

$y = 1$

14 $\frac{2x-3}{5} = 4$

$\times 5$

$2x - 3 = 20$

$2x = 20 + 3$

$2x = 23$

$x = \frac{23}{2}$

$x = 11\frac{1}{2}$

Equations Involving Brackets

Ex1

$2(x+5) = 16$

$2x + 10 = 16$

$2x = 16 - 10$

$2x = 6$

$x = \frac{6}{2}$

$x = 3$

Ex2

$5(2x-3) = 25$

$10x - 15 = 25$

$10x = 25 + 15$

$10x = 40$

$x = \frac{40}{10}$

$x = 4$

Classwork and Homework

EXERCISE 5F

Solve each of the following equations. Some of the answers may be decimals or negative numbers. Remember to check that each answer works for its original equation. Use your calculator if necessary.

1. $2(x + 5) = 16$
2. $5(x - 3) = 20$
3. $3(t + 1) = 18$
4. $4(2x + 5) = 44$
5. $2(3y - 5) = 14$
6. $5(4x + 3) = 135$
7. $4(3t - 2) = 88$
8. $6(2t + 5) = 42$
9. $2(3x + 1) = 11$
10. $4(5y - 2) = 42$
11. $6(3k + 5) = 39$
12. $5(2x + 3) = 27$
13. $9(3x - 5) = 9$
14. $2(x + 5) = 6$
15. $5(x - 4) = -25$
16. $3(t + 7) = 15$
17. $2(3x + 11) = 10$
18. $4(5t + 8) = 12$

HINTS AND TIPS

Once the brackets have been expanded the equations become straightforward. Remember to multiply *everything* inside the bracket with what is outside.

16) $3(t+7) = 15$

$3t + 21 = 15$

$3t = 15 - 21$

$3t = -6$

17) $2(3x+11) = 10$

$6x + 22 = 10$

$6x = 10 - 22$

$6x = -12$

$t = -\frac{6}{3}$

$\underline{t = -2}$

$x = -\frac{12}{6}$

$\underline{x = -2}$

9) $2(3x+1) = 11$

$6x + 2 = 11$

$6x = 11 - 2$

$6x = 9$

$x = \frac{9}{6}$

$x = 1\frac{1}{2}$

$4(5y-2) = 42$

$20y - 8 = 42$

$20y = 42 + 8$

$20y = 50$

$y = \frac{50}{20}$

$y = 2\frac{1}{2}$

11) $6(3k+5) = 39$

$18k + 30 = 39$

$18k = 39 - 30$

$18k = 9$

$k = \frac{9}{18}$

$k = \frac{1}{2}$

12) $5(2x+3) = 27$

$10x + 15 = 27$

$10x = 27 - 15$

$10x = 12$

$x = \frac{12}{10}$

$x = 1\frac{1}{5}$

13) $9(3x-5) = 9$

$27x - 45 = 9$

$27x = 9 + 45$

$27x = 54$

$x = \frac{54}{27}$ $\underline{x = 2}$

14) $2(x+5) = 6$

$2x + 10 = 6$

$2x = 6 - 10$

$2x = -4$

$x = -\frac{4}{2}$

$\underline{x = -2}$