

Basic Skills Worksheet

Convert the following to scientific notation in standard form

- 1) 43126 4.3126×10^4 1) _____
- 2) .0042 4.2×10^{-3} 2) _____
- 3) -700000 -7×10^5 3) _____
- 4) -.0000150 -1.50×10^{-5} 4) _____
- 5) .0075 $\times 10^3$ $= (7.5 \times 10^{-3}) \times 10^3 = 7.5 \times 10^0 = 7.5$ 5) _____
- 6) 970 $\times 10^{-4}$ $(9.70 \times 10^2) \times 10^{-4} = 9.7 \times 10^{-2}$ 6) _____
- 7) -.000516 $\times 10^{-5}$ $(-5.16 \times 10^{-4}) \times 10^{-5} = -5.16 \times 10^{-9}$ 7) _____

Round the following to the number of figures shown and convert to scientific notation in standard form

- 8) 634000 round to 2 figures $630000 = 6.3 \times 10^5$ 8) _____
- 9) .0345 round to 2 figures $0.035 = 3.5 \times 10^{-2}$ 9) _____
- 10) 298.76×10^{-4} round to 1 figure $(3.0 \times 10^2) \times 10^{-4} = 3.0 \times 10^{-2}$ 10) _____
- 11) 8.651 round to 2 figures $8.7 = 8.7 \times 10^0$ 11) _____

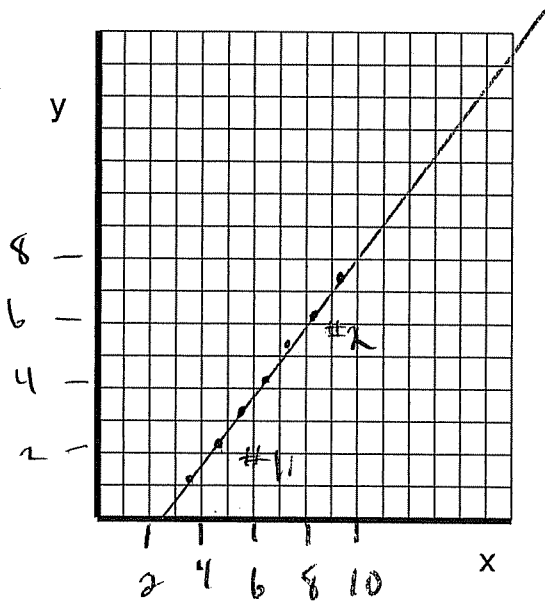
Unit conversions

- 12) 3500 mm into km $3500 \text{ mm} \left(\frac{1 \text{ m}}{1000 \text{ mm}} \right) \left(\frac{1 \text{ km}}{1000 \text{ m}} \right) = .0035 \text{ km}$
 $3.5 \times 10^{-3} \text{ km}$ 12) _____
- 13) 22.3 metres/second into km/hr 13) _____
 $22.3 \frac{\text{m}}{\text{s}} \left(\frac{3600 \text{ s}}{\text{hr}} \right) \left(\frac{1 \text{ km}}{1000 \text{ m}} \right) = 80.3 \text{ m/s}$
- 14) 4584 secs to min & hours 14) _____
 $4584 \text{ sec} \left(\frac{1 \text{ min}}{60 \text{ s}} \right) = 76.4 \text{ min}$ $76.4 \left(\frac{1 \text{ hr}}{60 \text{ min}} \right) = 1.27 \text{ hr}$

15) Graphing

Graph the following data on the graph below:

X	1.2	2.2	3.3	4.2	5.3	6.2	7.4
Y	3.5	4.4	5.6	6.4	7.3	8.3	9.2



$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{8.3 - 4.4}{6.2 - 2.2} = \frac{3.9}{4.0} = .975$$

a) Determine the slope of the line from the graph

b) Estimate the y-intercept of the graph, and combine it with the slope to determine the equation of the line. Your answer should look like this: $y=mx+b$ - write in your values for m and b.

Solve the following equations:

16) $a + 7 = 16$
 $\quad -7 \quad -7$ $a = 23$

17) $x - 11 = 45$
 $\quad +11 \quad +11$ $x = 56$

18) $17 + x = -29$

$$\begin{array}{r} -17 \quad -17 \\ \hline x = -46 \end{array}$$

19) $25 - x = 8$

$$\begin{array}{r} +x \quad +x \\ \hline 25 = 8 + x \\ -8 \quad -8 \\ \hline 17 = x \end{array}$$

20) $3x = 27$

$$\begin{array}{r} \frac{3}{3} \quad \frac{3}{3} \\ \hline x = 9 \end{array}$$

21) $\left(\frac{x}{4}\right)^4 = (12)^4$ $x = 48$

22) $\frac{2x\left(\frac{3}{2}\right)}{3\left(\frac{2}{3}\right)} - 10\left(\frac{3}{2}\right) = -15$

23) $\frac{4x\left(\frac{37}{4}\right)}{37\left(\frac{1}{37}\right)} = 28\left(\frac{37}{4}\right)$

$$\frac{7}{28}\left(\frac{37}{4}\right) = 259$$

24) $3x + 7 = 34$

$$\begin{array}{r} -7 \quad -7 \\ \hline 3x = 27 \\ \frac{3}{3} \quad \frac{3}{3} \\ \hline x = 9 \end{array}$$

25) $3x - 11 = 46$

$$\begin{array}{r} +11 \quad +11 \\ \hline 3x = 57 \\ \frac{3}{3} \quad \frac{3}{3} \\ \hline x = 19 \end{array}$$

26) $17 + 2x = -29$

$$\begin{array}{r} -17 \quad -17 \\ \hline 2x = -46 \\ \frac{2}{2} \quad \frac{2}{2} \\ \hline x = -23 \end{array}$$

27) $25 - 17x = 8$

$$\begin{array}{r} -25 \quad -25 \\ \hline -17x = -17 \\ \frac{-17x}{-17} = \frac{-17}{-17} \quad x = 1 \end{array}$$

28) $4x + 11 = 55$

$$\begin{array}{r} -11 \quad -11 \\ \hline 4x = 44 \\ \frac{4x}{4} = \frac{44}{4} \quad x = 11 \end{array}$$

29) $3x - 9 = -33$

$$\begin{array}{r} +9 \quad +9 \\ \hline 3x = -24 \\ \frac{3x}{3} = \frac{-24}{3} \quad x = -8 \end{array}$$

30) $\frac{x}{4} + 7 = -2$

$$\frac{x}{4} - 7 = -9 \quad x = -36$$

31) $\frac{x}{3} - 6 = 15$

$$\frac{x}{3} + 6 = 21 \quad x = 63$$

32) $25 - \frac{x}{5} = 15$

$$-5\left(\frac{-x}{5}\right) = -10(-5), x = 50$$

33) $\frac{2x}{3} + 7 = -17$

$$\frac{3}{2}\left(\frac{2x}{3}\right) = -24\left(\frac{3}{2}\right), x = -36$$

34) $\frac{4x}{5} + 6 = 18$

$$\frac{5}{4}\left(\frac{4x}{5}\right) = 12\left(\frac{5}{4}\right), x = 15$$

$$35) \frac{2x}{3} - 11 = 45$$

+11 +11

$$\frac{2}{3} \left(\frac{2}{3}x \right) = 56 \left(\frac{2}{2} \right) = x = 84$$

$$36) 25 - \frac{2x}{3} = 15$$

-25 -25

$$-\frac{2}{3} \left(-\frac{2}{3}x \right) = -10 \left(\frac{-3}{-2} \right) x = 15$$

$$37) 3(x+5) = 18$$

$$3x + 15 = 18$$

-15 -15

$$3x = 3 \quad x = 1$$

$$38) \frac{2(x-7)}{2} = \frac{22}{2}$$

$$x-7 = 11$$

+7 +7

$$2x = 18$$

$$39) \frac{5(4-x)}{5} = \frac{55}{5}$$

$$4-x = 11$$

-4 -4

$$-x = 7$$

$$x = -7$$

$$40) \frac{3(2x+5)}{3} = \frac{-21}{3}$$

$$2x+5 = -7$$

-5 -5

$$2x = -12$$

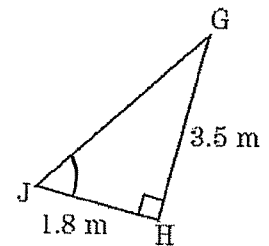
$$x = -6$$

Solve the following triangles:

11) In the triangle, determine $\angle J$ to the nearest degree.

- a) 27° b) 31° c) 53° d) 59° e) 63°

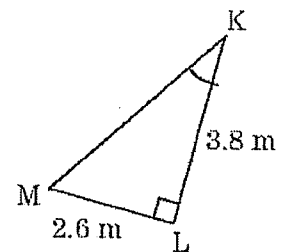
$$\tan^{-1} \left(\frac{3.5}{1.8} \right)$$



12) In the triangle, determine $\angle K$ to the nearest degree.

- a) 24° b) 34° c) 43° d) 47° e) 56°

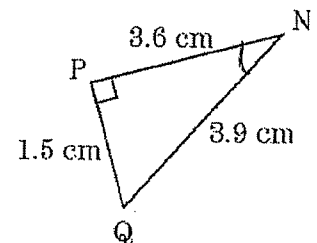
$$\tan^{-1} \left(\frac{2.6}{3.8} \right)$$



13) In $\triangle NPQ$, calculate $\angle N$ to the nearest degree.

- a) 23° b) 25° c) 33° d) 65° e) 67°

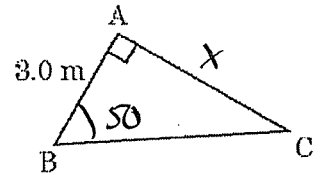
$$\sin^{-1} \left(\frac{1.5}{3.9} \right)$$



44) In $\triangle ABC$, calculate AC to two decimal places given that $\angle B = 50^\circ$.

- a) 0.40m b) 1.93m c) 2.30m d) 2.52m e) 3.58m

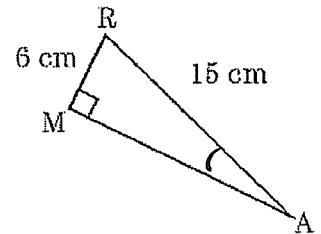
$$\tan 50^\circ = \frac{x}{3}, \quad x = 3 \tan 50^\circ$$



45) In the triangle shown, determine $\angle A$ to the nearest degree.

- a) 22° b) 24° c) 32° d) 66° e) 68°

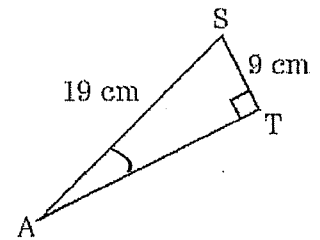
$$\sin^{-1}\left(\frac{6}{15}\right)$$



46) In the triangle shown, determine $\angle A$ to the nearest degree.

- a) 18° b) 25° c) 28° d) 62° e) 65°

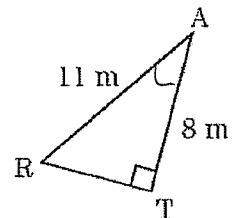
$$\sin^{-1}\left(\frac{9}{19}\right)$$



47) In the triangle shown, determine $\angle A$ to the nearest degree.

- a) 32° b) 36° c) 43° d) 47° e) 54°

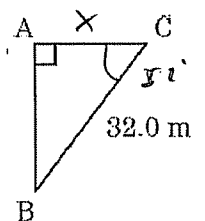
$$\cos^{-1}\left(\frac{8}{11}\right)$$



48) In $\triangle ABC$, calculate AC to the nearest centimetre given that $\angle C = 52^\circ$.

- a) 18 cm b) 20 cm c) 25 cm d) 41 cm e) 52 cm

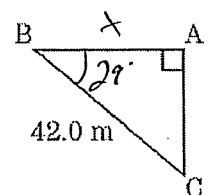
$$\cos 52^\circ = \frac{x}{32}, \quad 32 \cos 52^\circ = x$$



49) In $\triangle ABC$, calculate AB to the nearest centimetre given that $\angle B = 29^\circ$.

- a) 20 cm b) 23 cm c) 37 cm d) 48 cm e) 76 cm

$$\cos 29^\circ = \frac{x}{42}, \quad x = 42 \cos 29^\circ$$



Answers:

- | | | | |
|-----------------------------|-----------------------|---------|--------|
| 1. 4.3126×10^4 | 14. 76.4 min, 1.27 hr | 27. 1 | 40. -6 |
| 2. 4.2×10^{-3} | 15. | 28. 11 | 41. E |
| 3. -7.0×10^5 | 16. 9 | 29. -8 | 42. B |
| 4. -1.5×10^{-5} | 17. 56 | 30. -36 | 43. A |
| 5. 7.5 | 18. -46 | 31. 63 | 44. E |
| 6. 9.7×10^{-2} | 19. 17 | 32. 50 | 45. B |
| 7. -5.16×10^{-9} | 20. 9 | 33. -36 | 46. C |
| 8. 6.3×10^5 | 21. 48 | 34. 15 | 47. C |
| 9. 3.5×10^{-2} | 22. -15 | 35. 84 | 48. B |
| 10. 3×10^{-2} | 23. 259 | 36. 15 | 49. C |
| 11. 8.7 | 24. 9 | 37. 1 | |
| 12. 3.5×10^{-3} km | 25. 19 | 38. 18 | |
| 13. 80.3 km/hr | 26. -23 | 39. -7 | |