



Pre Course Math Revision Worksheet ANSWERS

PART A

Q1 If $C = f \lambda$

And $f = 10$, $\lambda = 1$, Calculate C

$$C = 10 \times 1$$

$$C = 10$$

Q2 If $C = f \lambda$

And $f = 10$, $\lambda = 10$, Calculate C

$$C = 10 \times 10$$

$$C = 100$$

Q3 If $C = f \lambda$

And $f = 5$, $C = 5.8$, Calculate λ

$$C = f \lambda \quad \text{can be rewritten as} \quad \lambda = C / f$$

$$\lambda = 5.8 / 5$$

$$\lambda = 1.16$$

Q4 If $C = f \lambda$

And $f = 5$, $C = 3.2$, Calculate λ

$$C = f \lambda \quad \text{can be rewritten as} \quad \lambda = C / f$$

$$\lambda = 3.2 / 5$$

$$\lambda = 0.64$$

Q5 If $C = f \lambda$

And $\lambda = 1.18$, $C = 5.9$, Calculate f

$$C = f \lambda \quad \text{can be rewritten as} \quad f = C / \lambda$$

$$f = 5.9 / 1.18$$

$$f = 5$$

Q6 If $C = f \lambda$

And $\lambda = 5.9$, $C = 5.9$, Calculate f

$$C = f \lambda \quad \text{can be rewritten as} \quad f = C / \lambda$$

$$f = 5.9 / 5.9$$

$$f = 1$$

Q7 If $N = \frac{D^2}{4\lambda}$

And $\lambda = 1.18$, $D = 10$, Calculate N

$$N = \frac{D^2}{4\lambda}$$

$$N = \frac{10^2}{4 \times 1.18}$$

$$N = \frac{100}{4.72}$$

$$N = 21.18$$

Q8 If $N = \frac{D^2}{4\lambda}$

And $\lambda = 3$, $D = 14$, Calculate N

$$N = \frac{D^2}{4\lambda}$$

$$N = \frac{14^2}{4 \times 3}$$

$$N = \frac{196}{12}$$

$$N = 16.33$$

Q9 If $N = \frac{D^2}{4\lambda}$ and $C = f \lambda$

And $C = 5.9$, $D = 14$, $f = 5$, Calculate N

Step 1- Calculate λ

$$C = f \lambda \quad \text{can be rewritten as} \quad \lambda = C / f$$

$$\lambda = 5.9 / 5$$

$$\lambda = 1.18$$

Step 2 – Calculate N

$$N = \frac{D^2}{4\lambda}$$

$$N = \frac{14^2}{4 \times 1.18}$$

$$N = \frac{196}{4.72}$$

$$N = 41.5$$

Q10 If $N = \frac{D^2}{4\lambda}$ and $C = f \lambda$

And $C = 3.2$, $D = 10$, $f = 5$, Calculate N

Step 1- Calculate λ

$$C = f \lambda \quad \text{can be rewritten as} \quad \lambda = C / f$$

$$\lambda = 3.2 / 5$$

$$\lambda = 0.64$$

Step 2 – Calculate N

$$N = \frac{D^2}{4\lambda}$$

$$N = \frac{10^2}{4 \times 0.64}$$

$$N = \frac{100}{2.56}$$

$$N = 39.06$$

Q11 If $AB = CD$

And $B=5$, $C=10$, $D=20$, Calculate A

$$AB = CD \quad \text{can be rewritten as} \quad A = \frac{CD}{B}$$

$$A = \frac{CD}{B}$$

$$A = \frac{10 \times 20}{5}$$

$$A = 40$$

Q12 If $AB = CD$

And $A=4, C=16, D=10$, Calculate B

$AB = CD$ can be rewritten as $B = \frac{CD}{A}$

$$B = \frac{CD}{A}$$

$$B = \frac{16 \times 10}{4}$$

$$B = 40$$

Q13 If $AB = CD$

And $A=5, B=6, D=12$, Calculate C

$AB = CD$ can be rewritten as $C = \frac{AB}{D}$

$$C = \frac{AB}{D}$$

$$C = \frac{5 \times 6}{12}$$

$$C = 2.5$$

Q14 If $AB = CD$

And $A=1, B=2, C=100$, Calculate D

$AB = CD$ can be rewritten as $D = \frac{AB}{C}$

$$D = \frac{1 \times 2}{100}$$

$$D = 0.02$$

Q15 If $A = B^2$

And $B = 10$, Calculate A

$$A = 10^2$$

$$A = 100$$

Q16 If $A = \sqrt{B}$

And $B = 9$, Calculate A

$$A = \sqrt{9}$$

$$A = 3$$

Q17 If $A = \sqrt{B}$

And $B = 64$, Calculate A

$$A = \sqrt{64}$$

$$A = 8$$

Q18 If $A = B^2$

And $A = 25$, Calculate B

$$A = B^2 \quad \text{Can be rewritten as} \quad B = \sqrt{A}$$

$$B = \sqrt{25}$$

$$B = 5$$

Q19 If $A = B^2$

And $A = 90$, Calculate B

$$A = B^2 \quad \text{Can be rewritten as } B = \sqrt{A}$$

$$B = \sqrt{90}$$

$$B = 9.49$$

Q20 If $A = \sqrt{B}$

And $A = 9$, Calculate B

$$A = \sqrt{B} \quad \text{Can be rewritten as } B = A^2$$

$$B = 9^2$$

$$B = 81$$

Q21 If $I_1 D_1^2 = I_2 D_2^2$

And $I_1 = 100$, $D_1 = 1$, $D_2 = 2$, Calculate I_2

$$I_1 D_1^2 = I_2 D_2^2 \quad \text{can be rewritten as } I_2 = \frac{I_1 D_1^2}{D_2^2}$$

$$I_2 = \frac{100 \times 1^2}{2^2}$$

$$I_2 = \frac{100}{4}$$

$$I_2 = 25$$

Q22 If $I_1 D_1^2 = I_2 D_2^2$

And $I_1 = 60$, $D_1 = 10$, $D_2 = 3$, Calculate I_2

$$I_1 D_1^2 = I_2 D_2^2 \text{ can be rewritten as } I_2 = \frac{I_1 D_1^2}{D_2^2}$$

$$I_2 = \frac{60 \times 10^2}{3^2}$$

$$I_2 = \frac{6000}{9}$$

$$I_2 = 666.67$$

Q23 If $I_1 D_1^2 = I_2 D_2^2$

And $I_1 = 100$, $D_1 = 1$, $I_2 = 10$, Calculate D_2

$$I_1 D_1^2 = I_2 D_2^2 \text{ can be rewritten as } D_2^2 = \frac{I_1 D_1^2}{I_2}$$

$$D_2^2 = \frac{100 \times 1^2}{10}$$

$$D_2^2 = \frac{100}{10}$$

$$D_2^2 = 10$$

$$D_2 = \sqrt{10}$$

$$D_2 = 3.16$$

Q24 If $I_1 D_1^2 = I_2 D_2^2$

And $I_1 = 1050$, $D_1 = 0.5$, $I_2 = 50000$, Calculate D_2

$$I_1 D_1^2 = I_2 D_2^2 \text{ can be rewritten as } D_2^2 = \frac{I_1 D_1^2}{I_2}$$

$$D_2^2 = \frac{1050 \times 0.5^2}{50000}$$

$$D_2^2 = \frac{262.5}{50000}$$

$$D_2^2 = 0.00525$$

$$D_2 = \sqrt{0.00525}$$

$$D_2 = 0.072$$

Q25 If $\sin \theta = X$

And $\theta = 45^\circ$, Calculate X

$$\sin 45^\circ = 0.707$$

Q26 If $\sin \theta = X$

And $\theta = 0^\circ$, Calculate X

$$\sin 0^\circ = 0.0$$

Q27 If $\sin \theta = X$

And $\theta = 90^\circ$, Calculate X

$$\sin 90^\circ = 1.0$$

Q28 If $\sin \theta = X$

And $X = 0.5$ Calculate θ

$\sin \theta = X$ can be rewritten as $\theta = \sin^{-1} X$

$$\theta = \sin^{-1} X$$

$$\theta = \sin^{-1} 0.5$$

(Note: most calculators will require you to press shift before the sin function to enable \sin^{-1})

$$\theta = 30^\circ$$

Q29 If $\sin \theta = X$

And $X = 0.707$ Calculate θ

$\sin \theta = X$ can be rewritten as $\theta = \sin^{-1} X$

$$\theta = \sin^{-1} X$$

$$\theta = \sin^{-1} 0.707$$

$$\theta = 45^\circ$$

Q30 If $\sin \theta = X$

And $X = 1$ Calculate θ

$\sin \theta = X$ can be rewritten as $\theta = \sin^{-1} X$

$$\theta = \sin^{-1} X$$

$$\theta = \sin^{-1} 1$$

$$\theta = 90^\circ$$

PART B

Convert the following:

Q1 1520 m = 1.52 km

Q2 5278 mm = 5.278 m

Q3 427 mm = 0.427 m

Q4 18 cm = 180 mm

Q5 42 mm = 0.000042 km

 = 4.2×10^{-5} km

Q6 400 Hz = 0.4 kHz

Q7 4.2 MHz = 4200000 Hz

 = 4.2×10^6 Hz

Q8 51 kHz = 51000000 mHz

 = 5.1×10^7 mHz

Q9 570 GBq = 0.570 TBq

Q10 0.332 TBq = 332 GBq

Q11 1 Sv = 1000 mSv

Q12 1Sv = 1000000 μ Sv

Q13 57mSv = 57000 μ Sv

Q14 93 μ Sv = 0.093 mSv

$$\begin{aligned} \text{Q15 } 0.33 \mu\text{Sv} &= 0.00000033 \text{ Sv} \\ &= 3.3 \times 10^{-7} \text{ Sv} \end{aligned}$$

$$\text{Q16 } 45 \text{ km/hr} = 0.0125 \text{ km/second}$$

$$\begin{aligned} \text{Q17 } 61 \text{ m/second} &= 21960000 \text{ cm/hour} \\ &= 2.196 \times 10^7 \text{ cm/hour} \end{aligned}$$

$$\text{Q18 } 125 \text{ km/hour} = 34.7 \text{ m/second}$$

$$\text{Q19 } 52 \mu\text{Sv/day} = 6.02 \times 10^{-10} \text{ Sv/second}$$

$$\text{Q20 } 0.0031 \text{ mSv/hr} = 8.6 \times 10^{-4} \mu\text{Sv/second}$$

Notes:

m = Meters , measure of distance

Hz = Hertz , measure of frequency

Bq = Becquerel , measure of activity.

Sv = Sievert , measure of radiation

Prefix	Symbol	Value
yotta	(Y)	10^{24}
zetta	(Z)	10^{21}
exa	(E)	10^{18}
peta	(P)	10^{15}
tera	(T)	10^{12}
giga	(G)	10^9
mega	(M)	10^6
kilo	(k)	10^3
hecto	(h)	10^2
deka	(da)	10^1

Prefix	Symbol	Value
deci	(d)	10^{-1}
centi	(c)	10^{-2}
milli	(m)	10^{-3}
micro	(u)	10^{-6}
nano	(n)	10^{-9}
pico	(p)	10^{-12}
femto	(f)	10^{-15}
atto	(a)	10^{-18}
zepto	(z)	10^{-21}
yocto	(y)	10^{-24}