worksheet - 9.

1. $\lambda = \frac{c}{\mu} = \frac{3 \times 10^8}{3 \times 10^6}$

$\lambda = 100$ meter.

2. Bandwidth is $4 \times 10^3 \times 1 \times 2$

3. 1.536 mbps.

4. $10 \log_{10}\left(\frac{S}{N}\right) = 10$

$\log_{10}\left(\frac{S}{N}\right) = 5$

$S/N = 10^5$

$C = (10 \times 10^3) \log_2 (1 + 10^5)$

$= 10^4 \log_2 (1 + 10^5)$

5. 20
10000
5000

10000×1000 bps

$\approx$ 8mbps.

6. $\frac{8000 \times 1000}{3 \times 10^8}$ m/s

$= 2.6$ m/s.

8/

7.

3K bytes

2 Gbps

$$\frac{3000 \times 8}{2 \times 10^9} = 0.012$$

8.

$= 10 \times 10 \times 1 \times 1$

$= 100$ [illegible]

$= 101$ kHz

9.

8 bytes $\times 8 \Rightarrow 64 \times 100$

$\Rightarrow 6400$ bps

10.

throughput = [illegible] $\times 0.0368$

$\Rightarrow 368 \times$ [illegible]