

Name: **KEY**

### Final Exam Review Pack – Section 2

- Remember to set up your ratios using multiplication so the units cancel top and bottom.
- Then multiply across and divide the last ratio if necessary.
- Cancel the Units!!

Ratio (Read Top <b>per</b> Bottom)
$\frac{1cm}{10mm} \leftrightarrow \frac{10mm}{1cm}$
$\frac{1m}{100cm} \leftrightarrow \frac{100cm}{1m}$
$\frac{1km}{1000m} \leftrightarrow \frac{1000m}{1km}$

Ratio (Read Top <b>per</b> Bottom)
$\frac{1mi}{1760yds} \leftrightarrow \frac{1760yds}{1mi}$
$\frac{1mi}{5280ft} \leftrightarrow \frac{5280ft}{1mi}$
$\frac{1yd}{3ft} \leftrightarrow \frac{3ft}{1yd}$
$\frac{1ft}{12in} \leftrightarrow \frac{12in}{1ft}$

Ratio (Read Top <b>per</b> Bottom)
$\frac{1mi}{1.609km} \leftrightarrow \frac{1.609km}{1mi}$
$\frac{1ft}{0.305m} \leftrightarrow \frac{0.305m}{1ft}$
$\frac{1in}{2.54cm} \leftrightarrow \frac{2.54cm}{1in}$

Ratio (Read Top <b>per</b> Bottom)
$\frac{1t}{1000kg} \leftrightarrow \frac{1000kg}{1t}$
$\frac{1kg}{1000g} \leftrightarrow \frac{1000g}{1kg}$
$\frac{1g}{1000mg} \leftrightarrow \frac{1000mg}{1g}$
$\frac{1T}{2000lb} \leftrightarrow \frac{2000lb}{1T}$
$\frac{1lb}{16oz} \leftrightarrow \frac{16oz}{1lb}$
$\frac{1g}{0.04oz} \leftrightarrow \frac{0.04oz}{1g}$
$\frac{1kg}{2.21lb} \leftrightarrow \frac{2.21lb}{1kg}$
$\frac{1t}{1.1T} \leftrightarrow \frac{1.1T}{1t}$

Ratio (Read Top <b>per</b> Bottom)
$\frac{60sec}{1min} \leftrightarrow \frac{1min}{60sec}$
$\frac{60min}{1hr} \leftrightarrow \frac{1hr}{60min}$
$\frac{1day}{24hr} \leftrightarrow \frac{24hr}{1day}$
$\frac{7day}{1week} \leftrightarrow \frac{1week}{7day}$
$\frac{52week}{1year} \leftrightarrow \frac{1year}{52week}$
$\frac{365days}{1year} \leftrightarrow \frac{1year}{365days}$

Fahrenheit to Celsius	Celsius to Fahrenheit
$F = \frac{9}{5}C + 32$	$C = \frac{5}{9}(F - 32)$

- When converting **across systems** of units (metric to imperial, etc.)
- Make the conversion at the **smallest unit of measure** (*oz – g, cm – in*)

Convert the following measurements to centimeters.

1. 1978 km

$$1978 \text{ km} \times \frac{1000 \text{ m}}{1 \text{ km}} \times \frac{100 \text{ cm}}{1 \text{ m}} = 197800000 \text{ cm}$$

2. 4.3 miles

$$4.3 \text{ miles} \times \frac{1760 \text{ yds}}{1 \text{ mile}} \times \frac{3 \text{ ft}}{1 \text{ yds}} \times \frac{12 \text{ in}}{1 \text{ ft}} \times \frac{2.54 \text{ cm}}{1 \text{ in}} = 692017.92 \text{ cm}$$

3. 2378 yards

$$2378 \text{ yds} \times \frac{3 \text{ ft}}{1 \text{ yd}} \times \frac{12 \text{ in}}{1 \text{ ft}} \times \frac{2.54 \text{ cm}}{1 \text{ in}} = 217444.32 \text{ cm}$$

4. 750.5 ft

$$750.5 \text{ ft} \times \frac{12 \text{ in}}{1 \text{ ft}} \times \frac{2.54 \text{ cm}}{1 \text{ in}} = 22875.24 \text{ cm}$$

5. 0.0015 yards

$$0.0015 \text{ yds} \times \frac{3 \text{ ft}}{1 \text{ yd}} \times \frac{12 \text{ in}}{1 \text{ ft}} \times \frac{2.54 \text{ cm}}{1 \text{ in}} = 0.13716 \text{ cm}$$

Convert the following measurements to feet.

6. 32 690 miles

$$32\,690 \text{ miles} \cdot \frac{1760 \text{ yds}}{1 \text{ mile}} \cdot \frac{3 \text{ ft}}{1 \text{ yd}} = 172603200 \text{ ft}$$

7. 0.67 km

$$0.67 \text{ km} \cdot \frac{1000 \text{ m}}{1 \text{ km}} \cdot \frac{1 \text{ ft}}{0.305 \text{ m}} = 2196.72 \text{ ft}$$

8. 1 578 000 mm

$$1578000 \text{ mm} \cdot \frac{1 \text{ cm}}{10 \text{ mm}} \cdot \frac{1 \text{ in}}{2.54 \text{ cm}} \cdot \frac{1 \text{ ft}}{12 \text{ in}} = 5177.17 \text{ ft}$$

9. 9.7 cm

$$9.7 \text{ cm} \cdot \frac{1 \text{ in}}{2.54 \text{ cm}} \cdot \frac{1 \text{ ft}}{12 \text{ in}} = 0.32 \text{ ft}$$

Convert the following measurement to miles.

10. 89 065 in

$$89065 \text{ in} \cdot \frac{1 \text{ ft}}{12 \text{ in}} \cdot \frac{1 \text{ yd}}{3 \text{ ft}} \cdot \frac{1 \text{ miles}}{1760 \text{ yd}} = 1.4 \text{ miles}$$

11. 47 890 cm

$$47890 \text{ cm} \cdot \frac{1 \text{ in}}{2.54 \text{ cm}} \cdot \frac{1 \text{ ft}}{12 \text{ in}} \cdot \frac{1 \text{ yd}}{3 \text{ ft}} \cdot \frac{1 \text{ mile}}{1760 \text{ yd}} = 0.3 \text{ miles}$$

12. 0.690 m

$$0.690 \text{ m} \cdot \frac{1 \text{ ft}}{0.305 \text{ m}} \cdot \frac{1 \text{ yd}}{3 \text{ ft}} \cdot \frac{1 \text{ mile}}{1760 \text{ yds}} = 0.000107 \text{ mile}$$

**Convert the following measurements to meters.**

13. 12 miles

$$12 \text{ miles} \cdot \frac{1760 \text{ yds}}{1 \text{ mile}} \cdot \frac{3 \text{ ft}}{1 \text{ yds}} \cdot \frac{0.305 \text{ m}}{1 \text{ ft}} = 19324.8 \text{ m}$$

14. 18 765 in

$$18765 \text{ in} \cdot \frac{2.54 \text{ cm}}{1 \text{ in.}} \cdot \frac{1 \text{ m}}{100 \text{ cm}} = 476.6 \text{ m}$$

15. 49.54 yds

$$49.54 \text{ yds} \cdot \frac{3 \text{ ft}}{1 \text{ yd}} \cdot \frac{0.305 \text{ m}}{1 \text{ ft}} = 45.3 \text{ m}$$

**Perform the following MASS conversions.**

16. Convert 3.7T to Ounces

$$3.7 \text{ T} \cdot \frac{2000 \text{ lbs}}{1 \text{ T}} \cdot \frac{16 \text{ oz}}{1 \text{ lbs}} = 118400 \text{ oz}$$

17. Convert 18.9 lbs to milligrams

$$18.9 \text{ lbs} \cdot \frac{16 \text{ oz}}{1 \text{ lb}} \cdot \frac{1 \text{ g}}{0.04 \text{ oz}} \cdot \frac{1000 \text{ mg}}{1 \text{ g}} = 7560000 \text{ mg}$$

18. Convert 24.8 kg to pounds

$$24.8 \text{ kg} \cdot \frac{2.2 \text{ lbs}}{1 \text{ kg}} = 54.8 \text{ lbs}$$

19. Convert 17 259 oz to tonnes (Metric)

$$17259 \text{ oz} \cdot \frac{1 \text{ g}}{0.04 \text{ oz}} \cdot \frac{1 \text{ kg}}{1000 \text{ g}} \cdot \frac{1 \text{ t}}{1000 \text{ kg}} = 0.43 \text{ t}$$

20. Convert 7.5 T to milligrams

$$7.5 \text{ T} \cdot \frac{2000 \text{ lbs}}{1 \text{ T}} \cdot \frac{16 \text{ oz}}{1 \text{ lb}} \cdot \frac{1 \text{ g}}{0.04 \text{ oz}} \cdot \frac{1000 \text{ mg}}{1 \text{ g}} = 600000000 \text{ mg}$$

**Perform the following TIME conversions.**

21. How many seconds are in 14 days?

$$14 \text{ days} \cdot \frac{24 \text{ hrs}}{1 \text{ day}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} \cdot \frac{60 \text{ sec}}{1 \text{ min}} = 1209600 \text{ sec.}$$

22. How many *weeks* are in 5 years?

$$5 \text{ years} \cdot \frac{52 \text{ weeks}}{1 \text{ year}} = 260 \text{ weeks}$$

23. How many *minutes* in the months of June, July and August?

30 31 31

$$91 \text{ days} \cdot \frac{24 \text{ hrs}}{1 \text{ day}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} = 131040 \text{ minutes}$$

24. How many *seconds* are in the first 4 months of the year? (Non-leap year)

Jan 31 Feb 28 March 31 April 30

$$120 \text{ days} \cdot \frac{24 \text{ hrs}}{1 \text{ day}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} \cdot \frac{60 \text{ sec}}{1 \text{ min}} = 10368000 \text{ sec.}$$

Perform the following TEMPERATURE conversions

25. How hot is 165°F in °C?

$$C = \frac{5}{9} (F - 32)$$

$$C = \frac{5}{9} (165 - 32)$$

$$C = \frac{5}{9} (133)$$

$$C = 73.9^\circ$$

26. What is 32°C in °F?

$$F = \frac{9}{5} (C + 32)$$

$$F = \frac{9}{5} (32) + 32$$

$$F = 89.6^\circ$$

Perform the following conversions of MULTIPLE UNITS.

27. If I can run at 5km/hr how fast am I going in m/s?

$$\frac{5 \text{ km}}{1 \text{ hr}} \cdot \frac{1000 \text{ m}}{1 \text{ km}} \cdot \frac{1 \text{ hr}}{60 \text{ min}} \cdot \frac{1 \text{ min}}{60 \text{ sec}} = \frac{5000 \text{ m}}{3600 \text{ sec}} = 1.38 \text{ m/s}$$

28. You watch an ant move 12cm in 2seconds, how fast is it travelling in km/hr?

$$\frac{12 \text{ cm}}{2 \text{ sec}} \cdot \frac{1 \text{ hr}}{100 \text{ cm}} \cdot \frac{1 \text{ km}}{1000 \text{ m}} \cdot \frac{60 \text{ sec}}{1 \text{ min}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} = \frac{43200}{200000} = 0.216 \text{ km/hr}$$

29. How fast is 7900km/h in miles/min??

$$\frac{7900 \text{ km}}{1 \text{ hr}} \cdot \frac{1 \text{ mile}}{1.609 \text{ km}} \cdot \frac{1 \text{ hr}}{60 \text{ min}} = \frac{7900}{96.54} = 81.83 \text{ miles/min}$$

30. If you are strong enough to push an object, with constant acceleration at 5 meters/sec, how far can you push it in 2 days?

$$\frac{5 \text{ m}}{\text{sec}} \cdot \frac{60 \text{ sec}}{1 \text{ min}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} \cdot \frac{24 \text{ hrs}}{1 \text{ day}} = 432000 \text{ m/day}$$

$$\frac{432000 \text{ m}}{1 \text{ day}} \cdot 2 \text{ day} = 864000 \text{ m}$$

