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## Math Assessment Test for Trades

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### Part 1: No Calculator permitted

#### Whole Numbers:

1. Addition & Subtraction

- a)  $132+83$                       b)  $325+876$                       c)  $362-79$                       d)  $806-548$

2. Multiplication & Division

- a)  $136\times 24$                       b)  $204\times 306$                       c)  $345\div 5$                       d)  $416\div 16$

3. What is the remainder for the following:

- a)  $\frac{42}{7}$                       b)  $\frac{37}{13}$                       c)  $\frac{54}{11}$                       d)  $\frac{111}{5}$

#### Signed Numbers:

1. Evaluate:

- a)  $-3\times 8$                       b)  $-4\times(-5)$                       c)  $-3^2$                       d)  $(-3)^2$

#### Multiples:

1. What is the least common multiple of: 12, 18?
2. What is the least common multiple of: 12, 18 and 24?

#### Decimals:

1. Convert to fraction:

- a) 0.75                      b) 0.0025                      c) 1.05                      d) 2.375

2. Evaluate:

- a)  $0.79+0.325$                       b)  $0.5-0.125$                       c)  $1.7 \times 0.25$   
d)  $-9.0135\times(-1000)$                       e)  $0.075\div 0.25$                       f)  $-48.96\div 0.001$

#### Fractions:

1. Convert  $\frac{31}{6}$  to mixed number format.

2. Convert  $3\frac{2}{7}$  to improper fraction.

3. Convert fraction to decimal:

- a)  $\frac{3}{5}$                       b)  $2\frac{3}{4}$                       c)  $\frac{19}{8}$

4. Evaluate:

- a)  $1\frac{3}{8} + \frac{3}{16}$                       b)  $2\frac{1}{8} - 1\frac{5}{6}$                       c)  $\frac{4}{5} \times 1\frac{3}{7}$                       d)  $3\frac{1}{3} \div 1\frac{1}{7}$

## Math Assessment Test for Trades

### Exponents and square roots:

1. Simplify:

a)  $x^2 \cdot x^3$

b)  $\frac{x^5}{x^2}$

c)  $(x^3)^2$

d)  $\sqrt{x^6}$

### Ratio and Proportion:

1. Solve for x:

a)  $\frac{x}{32} = \frac{1}{8}$

b)  $\frac{25}{x} = \frac{5}{8}$

- If a painter can paint a 240m<sup>2</sup> wall in 3 days, how long will it take to paint a 400m<sup>2</sup> wall?
- If 7 plumbers can do a job in 6 days, how long will it take 3 plumbers to do the same job?

### Rounding and ordering:

1. Round 3.14159265 to the nearest:

a) Tenths

b) Hundredth

2. Put in order from least to greatest:

1.125,  $1\frac{3}{4}$ , 2.875,  $\frac{25}{8}$ ,  $\frac{5}{2}$ ,  $\sqrt{9}$

### Percent:

- Convert 2.05 to percent notation.
- Convert  $1\frac{1}{4}$  to percent notation.
- What percent is 3 of 75?
- What percent of 40 is 18?
- An acid solution is 25% acid, the rest is water. If the total amount of liquid is 450 mL, then how much of the solution is water?
- Before leaving, Mike had filled up his cars tank to the maximum capacity of 90 L. If at the end of a drive, Mike has 63 L left, what percent of the gas did Mike use?

## Math Assessment Test for Trades

### Order of Operations:

1. Evaluate:

a)  $(53 - 45) \times 5$

b)  $14 + 56 \times 32$

c)  $(3\frac{1}{8} - 2\frac{3}{5}) \times 1\frac{2}{3}$

d)  $2\frac{5}{8} + 2\frac{3}{5} \times \frac{5}{13}$

e)  $(8 + 2) \times (-3)^2 + (-6) \div (-2)$

f)  $2 \times \left[ \left( -2.4 - \frac{13}{5} \right)^2 \div 2\frac{1}{2} - \left( -0.5 \times \frac{25}{5} \right) \right] - 4^2$

### Algebra:

1. Evaluate  $\frac{6c+b^2}{a}$  when  $a=8$ ,  $c=6$ ,  $b=-4$  (Answer as a fraction or mixed number in lowest term).

2.  $E=IR$ , solve for  $R$ ?

3.  $v = u + at$ , solve for  $t$ ?

4.  $v^2 = u^2 + 2as$ , solve for  $u$ ?

5.  $T = 2\pi \sqrt{\frac{l}{g}}$ , solve for  $g$ ?

### *Part 2: Calculators permitted*

### Measurement:

1 inch = 2.54 cm, 1 foot = 12 inches, 1 mile = 1.6 km

Round final answers to the nearest hundredth:

1. Convert 17.25 feet to

a) Inches

b) meters

2. Convert 6.25 square feet to

a) Square inches

b) Square meters

3. Convert 4 km to

a) cm

b) inches

c) miles



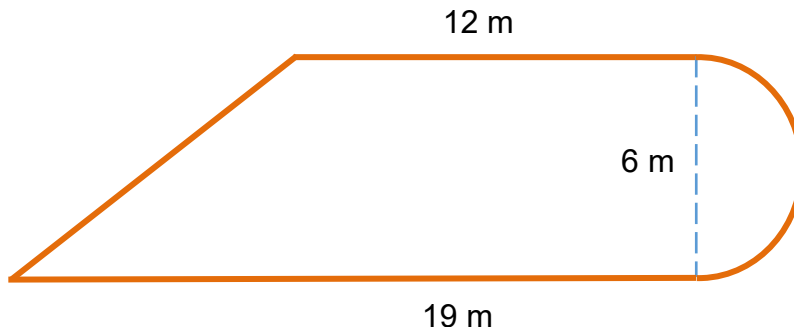
## Math Assessment Test for Trades

### Geometry:

<p>Circle:</p> $A = \pi r^2$ $C = 2\pi r = \pi D$	<p>Rectangle:</p> $A = l \times w$ $P = 2l + 2w$	<p>Triangle:</p> $A = \frac{1}{2}bh$
<p>Trapezoid:</p> $A = \frac{1}{2}(b_1 + b_2)h$	<p>Rectangular Solid:</p> $V = l \times w \times h$ $SA = 2wl + 2lh + 2wh$ $LA = 2(l + w)h$	<p>Cylinder:</p> $V = Bh$ $SA = 2B + Ch$ <p>B = area of base C=circumference</p>

Round final answers to the nearest hundredth:

1. What is the area of a rectangle that measures 5" × 2"? What is its perimeter?
2. What is the circumference of a circle with a diameter of 2"? What is its area?
3. A circle has an area of 25 square cm, what is its circumference?
4. A triangle has an area of 45 square inches, if its base measures 10 inches what is its height?
5. Find the area of a trapezoid with parallel side lengths of 4" and 6" and a height of 2".
6. A cylinder has a diameter of 3" and a height of 10" what is its volume? Its surface area?
7. Find the area and the perimeter of this figure (round your answer to the nearest hundredth).



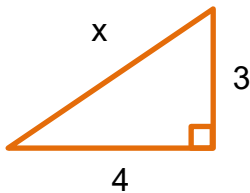
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### Trigonometry:

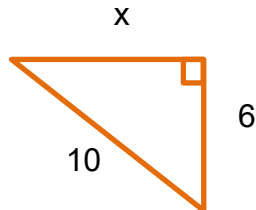
Round final answers to the nearest hundredth:

1. Find the length of side  $x$

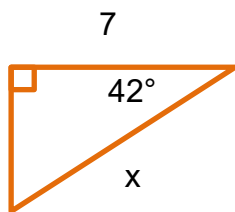
a)



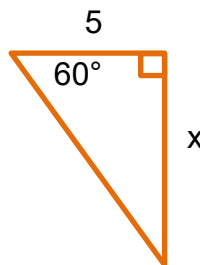
b)



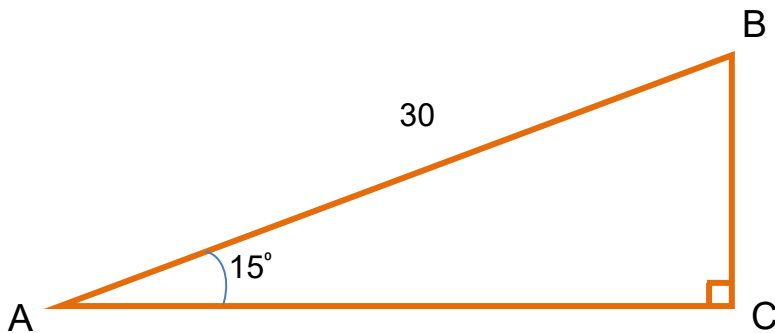
c)



d)



2. Solve the triangle (find all information):



$\angle B$

AC \_\_\_\_\_

BC \_\_\_\_\_

## Math Assessment Test for Trades

### Answer Key

#### Whole Numbers

- a) 215, b) 1201, c) 283, d) 258
- a) 3264, b) 62424, c) 69, d) 26
- a) 0, b) 11, c) 10, d) 1

#### Signed Numbers

- a) -24, b) 20, c) -9, d) 9

#### Factors and Multiples

- 36, 2. 72,

#### Decimals

- a)  $\frac{3}{4}$ , b)  $\frac{1}{400}$ , c)  $1\frac{1}{20}$ , d)  $2\frac{3}{8}$ ,
- a) 1.115, b) 0.375, c) 0.425, d) 9013.5, e) 0.3, f) -48960

#### Fractions

- $5\frac{1}{6}$ , 2.  $\frac{23}{7}$
- a) 0.6, b) 2.75, c) 2.375
- a)  $\frac{25}{16}$  or  $1\frac{9}{16}$ , b)  $\frac{7}{24}$ , c)  $\frac{8}{7}$  or  $1\frac{1}{7}$ , d)  $\frac{35}{12}$  or  $2\frac{11}{12}$

#### Exponents and square roots

- a)  $x^5$ , b)  $x^3$ , c)  $x^6$ , d)  $x^3$

#### Ratio and proportion

- a)  $x=4$ , b)  $x=40$
- 5 days
- 14 days

#### Rounding and Ordering

- a) 3.1, b) 3.14
- $1.125 < 1\frac{3}{4} < \frac{5}{2} < 2.875 < \sqrt{9} < \frac{25}{8}$

#### Percent

- 205%, 2. 125%, 3. 4%, 4. 45%, 5. 337.5 ml, 6. 30%

#### Order of Operations

- a) 40, b) 1806, c)  $\frac{7}{8}$ , d)  $3\frac{5}{8}$ , e) 93, f) 9

#### Algebra

- $\frac{13}{2}$  or  $6\frac{1}{2}$ , 2.  $R = \frac{E}{I}$ , 3.  $t = \frac{v-u}{a}$ , 4.  $u = \sqrt{v^2 - 2as}$ , 5.  $g = \frac{4\pi^2 l}{T^2}$

#### Measurement

- a) 207in, b) 5.26m
- a)  $900in^2$ , b)  $0.58m^2$
- a) 400,000cm, b) 157,480.32in, c) 2.50miles

#### Geometry

- $A=10in^2$ ,  $P=14in$ , 2.  $C=6.28in$ ,  $A=3.14in^2$ , 3.  $C = 17.72cm$ , 4. Height = 9 in,
- $A=10in^2$ , 6.  $V=70.69in^3$ ,  $SA=108.38in^2$ , 7. Area =  $107.14m^2$ , Perimeter = 49.465 m

#### Trigonometry

- a)  $x=5$ , b)  $x=8$ , c)  $x=9.42$ , d)  $x=8.66$
- $\angle B=75^\circ$ ,  $AC=28.98$ ,  $BC=7.76$