Math Assessment Test for Trades

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) 136×24   b) 204×306   c) 345÷5   d) 416÷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) -3×8   b) -4×(-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, 18and 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 ×0.25

    d) -9.0135×(-1000)   e) 0.075÷0.25   f) -48.96÷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) $3\frac{1}{3} \div 1\frac{1}{7}$

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

2. If a painter can paint a 240m² wall in 3 days, how long will it take to paint a 400m² wall?

3. 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:

1. Convert 2.05 to percent notation.

2. Convert $1\frac{1}{4}$ to percent notation.

3. What percent is 3 of 75?

4. What percent of 40 is 18?

5. 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?

6. 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?

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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. v² = u² + 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

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Geometry:

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

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).
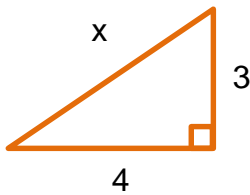

12 m

6 m

19 m

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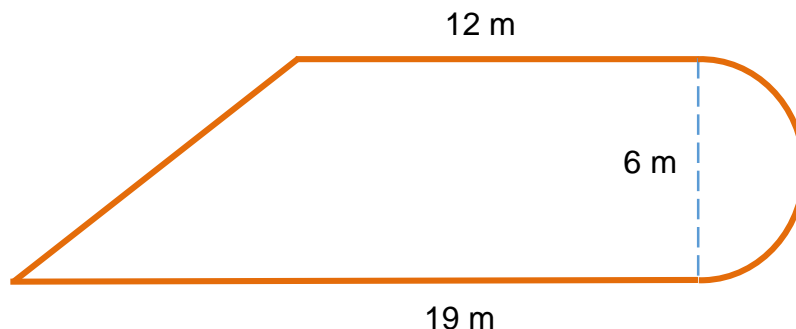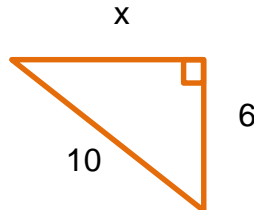
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Trigonometry:

Round final answers to the nearest hundredth:

1. Find the length of side x

a)

x
3
4

b)
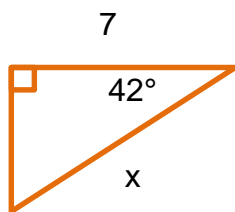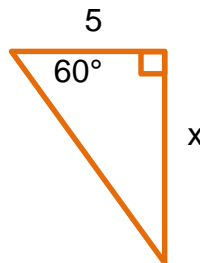
x
6
10

c)

7
42°
x

d)

5
60°
x

2. Solve the triangle (find all information):

B
30
15°
A
C

$<B$ _____

AC _____

BC _____

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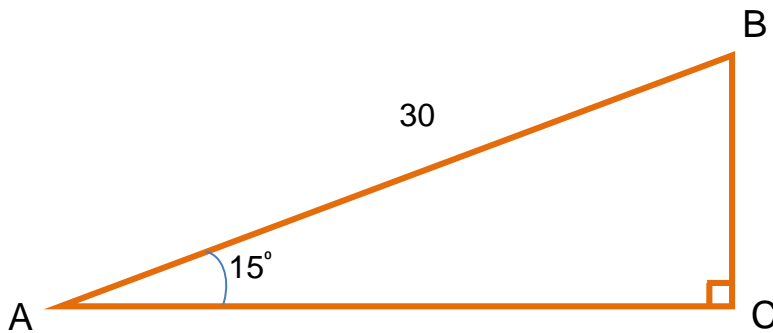
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Answer Key

Whole Numbers

1. a) 215, b) 1201, c) 283, d) 258

2. a) 3264, b) 62424, c) 69, d) 26

3. a) 0, b) 11, c) 10, d) 1

Signed Numbers

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

Factors and Multiples

1. 36, 2. 72,

Decimals

1. a) $\frac{3}{4}$, b) $\frac{1}{400}$, c) $1\frac{1}{20}$, d) $2\frac{3}{8}$,

2. a) 1.115, b) 0.375, c) 0.425, d) 9013.5, e) 0.3, f) -48960

Fractions

1. $5\frac{1}{6}$, 2. $\frac{23}{7}$

3. a) 0.6, b) 2.75, c) 2.375

4. 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

1. a) x^5, b) x^3, c) x^6, d) x^3

Ratio and proportion

1. a) x=4, b) x=40

2. 5 days

3. 14 days

Rounding and Ordering

1. a) 3.1, b) 3.14

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

Percent

1. 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

1. $\frac{13}{2}$ 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

1. a) 207in, b) 5.26m

2. a) $900 in^2$, b) $0.58 m^2$

3. a) 400,000cm, b) 157,480.32in, c) 2.50miles

Geometry

1. A=10 in^2, P=14 in, 2. C=6.28 in, A=3.14 in^2, 3. C = 17.72 cm, 4. Height = 9 in,

5. A=10 in^2, 6. V=70.69 in^3, SA=108.38 in^2, 7. Area = 107.14 m^2, Perimeter = 49.465 m

Trigonometry

1. a) x=5, b) x=8, c) x=9.42, d) x=8.66

2. <B=75°, AC=28.98, BC=7.76

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