

NORTHWEST INDIANA
BUILDING & CONSTRUCTION TRADES

SAMPLE APPRENTICESHIP
APTITUDE TEST



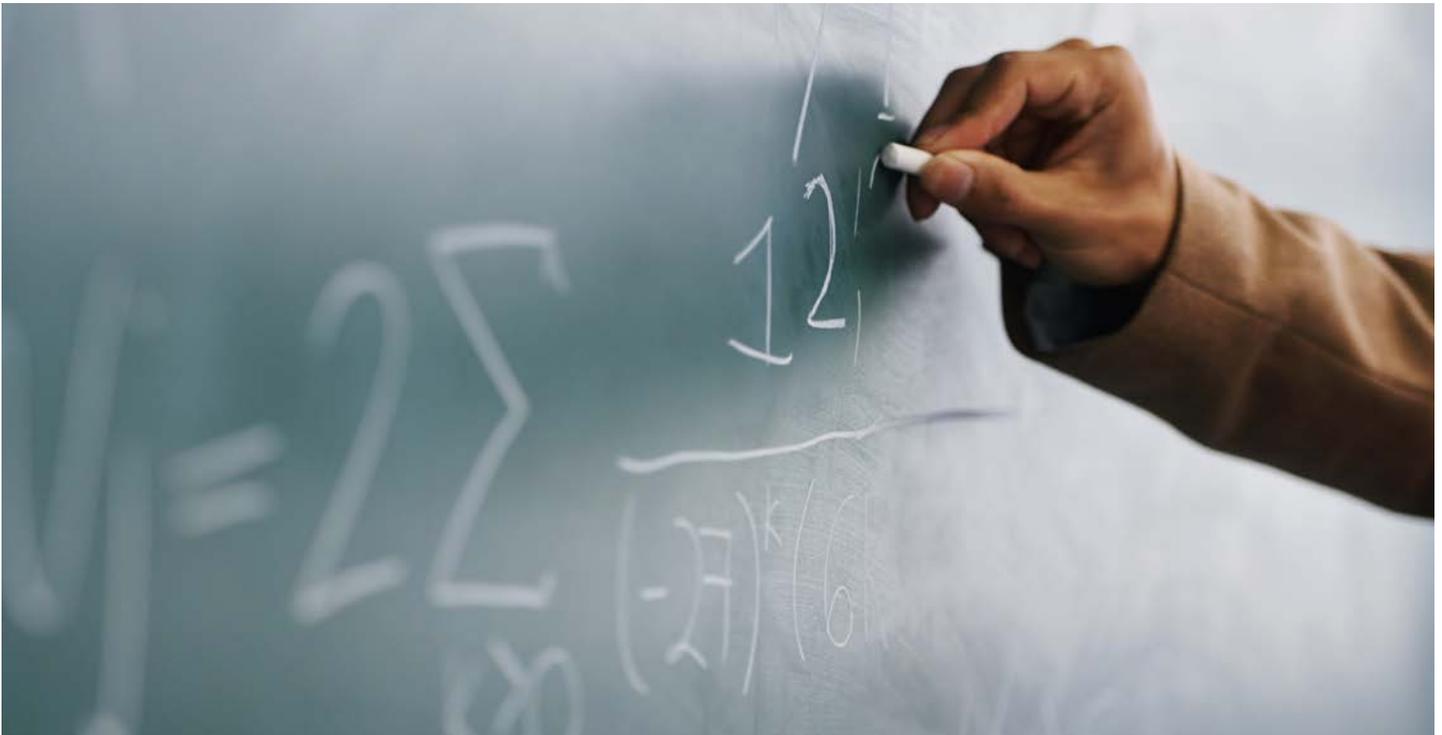
WHAT IS AN APTITUDE TEST?

An aptitude test is commonly the second step in a typical apprenticeship application process. It is designed to test proficiency in math, reading comprehension, and spatial awareness. If an applicant passes the test their score will be recorded as part of an overall ranking score, and they will be scheduled for an interview. If an applicant fails this test that person will have an opportunity to retest at a later date, typically 6 months from date of test.

The math portion may include:

- Whole Numbers
- Multiplying Decimals
- Dividing Decimals
- Adding and Subtracting Fractions
- Multiplying Fractions
- Rational and Irrational Numbers
- Positive and Negative Numbers
- Exponents
- Basic Algebra
- Distributive Property
- Linear Equations
- Factoring
- Multiplying Factors
- Factoring Quadratics
- Proportions
- Equivalent Ratios
- Missing Numbers

GENERAL MATH



1. $4821 + 302 =$

- A. 5853
- B. 5213
- C. 5123

2. $5463 - 8371 =$

- A. -2908
- B. -3718
- C. -2888

3. $45.3 + 121.86 =$

- A. 167.16
- B. 143.46
- C. 232.06

4. $93.5 - 72.78 =$

- A. 18.42
- B. 20.72
- C. 56.12

5. $54 \cdot 7 =$

- A. 378
- B. 458
- C. 398

6. $144 \div 18 =$

- A. 48
- B. 18
- C. 8

7. $36.375 \cdot 20 =$

- A. 727.5
- B. 1204.5
- C. 843.5

8. $422.625 \div 9.1875 =$

- A. 46
- B. 26
- C. 96

9. $3 \frac{1}{4} + 7 \frac{5}{8} =$

- A. $10 \frac{1}{8}$
- B. $10 \frac{7}{8}$
- C. $10 \frac{3}{8}$

GENERAL MATH

10. $53 \frac{5}{8} \div 6 \frac{1}{2} =$

- A. $8 \frac{2}{4}$
- B. $6 \frac{3}{4}$
- C. $8 \frac{1}{4}$

11. What is 130% of \$75 =

- A. \$107.5
- B. \$137.5
- C. \$97.5

12. $3 \frac{1}{4} \cdot 12 \frac{1}{2} =$

- A. $18 \frac{15}{16}$
- B. $12 \frac{1}{4}$
- C. $36 \frac{1}{8}$

13. $5 \frac{3}{8} - 3 \frac{7}{16} =$

- A. $1 \frac{15}{16}$
- B. $2 \frac{1}{2}$
- C. $-2 \frac{2}{3}$

14. What is 70% of 852?

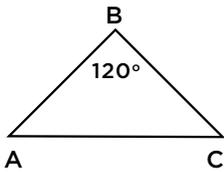
- A. 678.4
- B. 596.40
- C. 775.34

15. $A^2 + B^2 = C^2$

If $A=3$ and $C=5$ what is B ?

- A. $B = 4$
- B. $B = 2$
- C. $B = 3$

16.



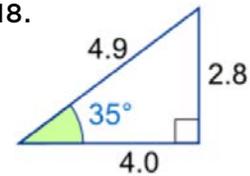
What is the value of angles A and C if angle B is 120 degrees in this isosceles triangle?

- A. $A, C = 45^\circ$
- B. $A, C = 120^\circ$
- C. $A, C = 30^\circ$

17. $\tan(360^\circ) =$

- A. $-1/2$
- B. 0
- C. 1

18.



Using the triangle above, what is the $\cos(35^\circ)$?

- A. .82
- B. 1.23
- C. 2.6

WORKKEYS ASSESSMENT

Below are sample questions available ranging from Level 3 – 7

Level 3

1. In your job as a cashier, a customer gives you a \$20 bill to pay for a can of coffee that costs \$3.84.

How much change should you give back?

- A. \$15.26
- B. \$16.16
- C. \$16.26

Level 4

2. Over the last 5 days, you made the following number of sale calls: 8,7,9,5 and 7.

On the average, how many calls did you make each day?

- A. 5.8
- B. 7.0
- C. 7.2

Level 5

3. You work in a furniture repair shop and are taking apart an old table to refinish it. You are trying to remove a bolt with a wrench. You tried a wrench size of $\frac{1}{2}$ inch but found that it was slightly too big. Your wrenches are sized in $\frac{1}{16}$ inch increments.

What size wrench would you use for this job?

- A. $\frac{1}{32}$
- B. $\frac{3}{8}$
- C. $\frac{7}{16}$

Level 6

4. A chemist has a certain number of containers of liquid. Each container is labeled with the number of fluid ounces it contains. The chemist is assigning a lab assistant the task of labeling each container with the number of cups of liquid it contains.

Which of the following formulas should the chemist give to the lab assistant to use for the task?

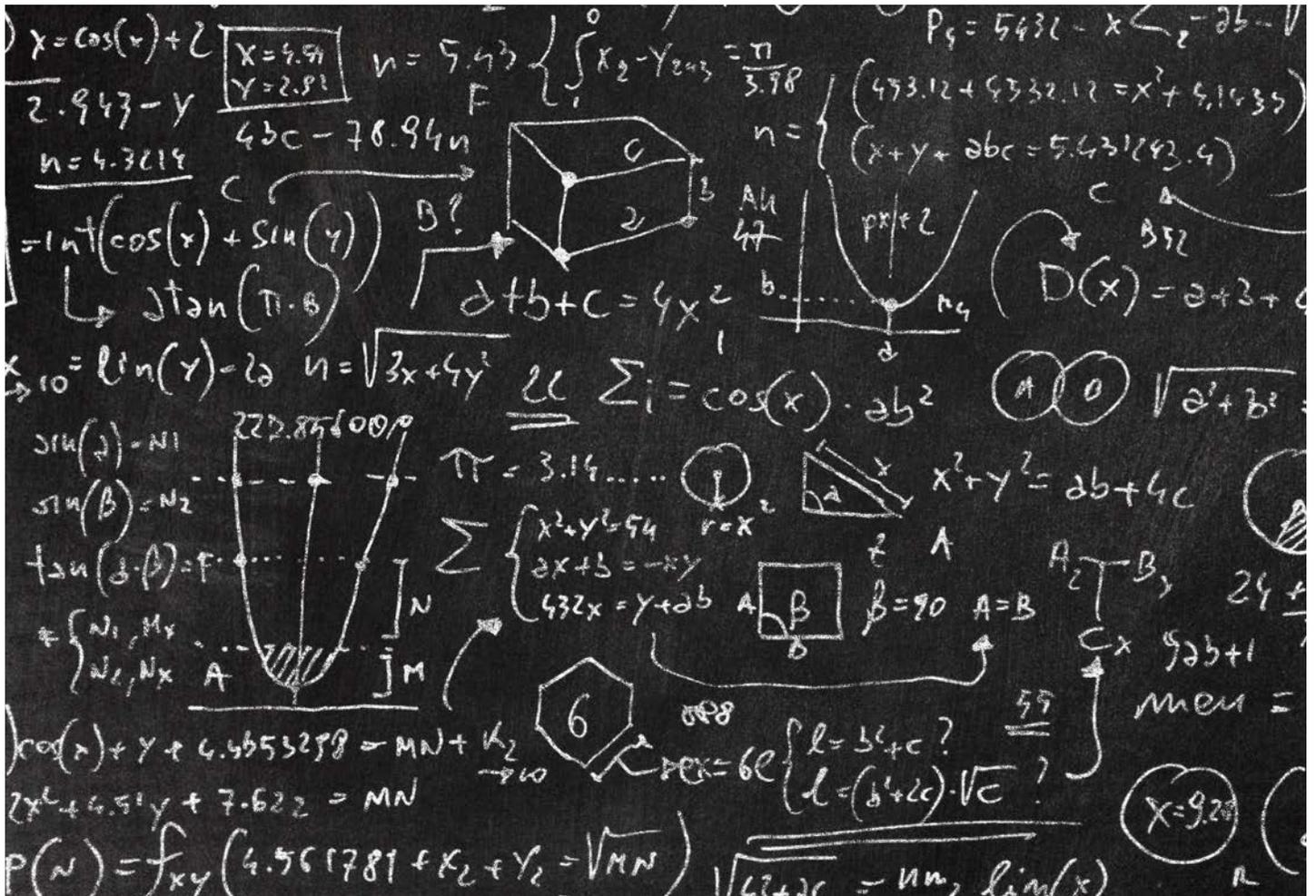
- A. Cups = 0.125 x (fluid ounces)
- B. Cups = 8 divided by (fluid ounces)
- C. Cups = 8 x (fluid ounces)

Level 7

5. The farm where you started working has a vertical cylindrical oil tank that is 2.5 feet across on the inside. The depth of the oil in the tank is 2 feet.

If 1 cubic foot of space holds 7.48 gallons about how many gallons of oil are left in the tank?

- A. 37
- B. 59
- C. 73



ALGEBRA

1. Consider the following formula: $A = B + 3(4 - C)$

If B equals 5 and C equals 2, what is the value of A?

- A. 7
- B. 11
- C. 12
- D. 17

2. Consider the following formula: $y = 3(x + 5)(x - 2)$

Which of the following formulas is equivalent to this one?

- A. $y = 3x^2 + 9x - 30$
- B. $y = x^2 + 3x - 10$
- C. $y = 3x^2 + 3x - 10$
- D. $y = 3x^2 + 3x - 30$

3. Consider the following pattern of numbers: 110, 112, 107, 109, 104

What is the next number in the pattern?

- A. 97
- B. 99
- C. 106
- D. 109

4. Consider the following formula: $a = \frac{1}{2}b - 4$

Which of the following statements is true for this formula?

- A. When the value of b is less than 8, a is negative.
- B. When the value of b is greater than 8, a is negative.
- C. When the value of b is less than 8, a is positive.
- D. When the value of b is greater than 4, a is positive.

READING COMPREHENSION

The timing of New Year's Day has changed with customs and calendars. The Mayan civilization, on what is now called the Yucatan peninsula of Mexico, celebrated the New Year on one of the two days when the noonday sun is directly overhead.

In the equatorial regions of the earth, between the Tropics of Cancer and Capricorn, the sun is in this position twice a year, once on its passage southward, and once on its passage northward. At the early Mayan city of Izapa in the southern Yucatan, the overhead date for the sun on its southward passage was August 13.

The Mayans celebrated this as the date for the beginning of the New Year. Later at the more northerly Mayan site at Edzna, the corresponding overhead date is July 26. Analyses of Mayan pictorial calendars indicate that they celebrated the New Year on August 13 prior to 150 AD, and on July 26 after that year.

This change has been explained by archaeological dating showing that 150 AD was the time that the Mayans moved the hub of their civilization from the southern to the northern site.

QUESTIONS

1. According to the passage, the sun at Edzna was directly overhead at noon on:

- A. July 26 only
- B. August 13 only
- C. July 26 and one other date
- D. August 13 and one other date

2. If the Mayans had moved their civilization's center south of Izapa, their new date for celebration of the New Year would probably have been closest to which of the following dates?

- A. January 1
- B. February 20
- C. March 25
- D. September 15

3. Based on the information in the passage, which of the following statements is true?

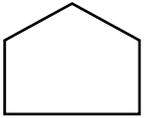
- A. Mayans made Edzna the capital because it was more temperate than Izapa.
- B. All Mayans moved to Edzna in 150 AD.
- C. Mayans used calendars to mark the passage of time.
- D. The Mayan city of Izapa was destroyed in 150 AD.

GEOMETRIC SHAPES

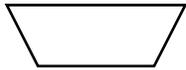
This is a test of your ability to identify a simple figure that is a part of a complex drawing. This test contains two parts.

In each part, you will be given a set of five simple figures and a number of more complicated drawings. Look at each drawing and try to discover which one of the simple figures is contained in it. The simple figure must be the **same shape, the same size, and in the same upright position** as the original simple figure. However, it does not make any difference if there are other lines running through the simple figure.

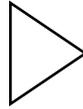
Here are five simple figures



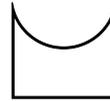
A



B



C

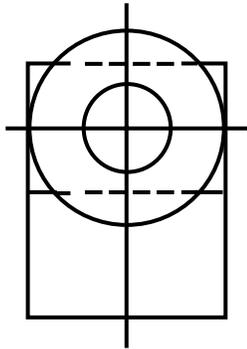


D



E

Which one of the above figures is a part of each of the complex drawings below? Mark an X in the box that has the same letter as the simple figure.



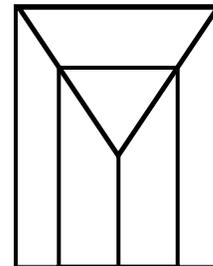
A

B

C

D

E



A

B

C

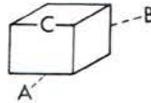
D

E

SPACIAL AWARENESS

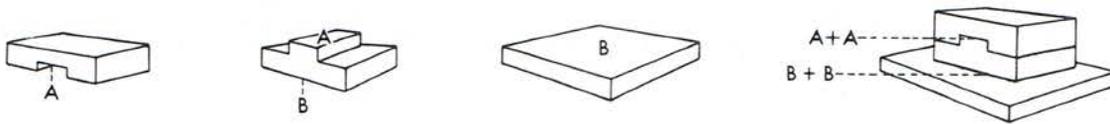
This is a test of your ability to visualize the assembly of mechanical parts. The separate parts are shown at the beginning of each test item. Following the picture of the parts are five assemblies of these parts. You are to select the assembly which shows how the parts will look when fitted together. Each part is marked with one or more letters which identify some particular place on the part. Letters referring to places which do not show are placed outside the part, with a dotted line pointing to the underneath side — or the place that you can't see. **Figure 1** shows how a part is marked. In this figure, the letter A refers to the bottom of the cube, and B points to the back of the cube. Letter C refers to the upper front edge.

Figure 1



In the rest, several parts are to be assembled so that the places having the same letters are put together. Look at **Example 1**. The section of the first part called A is joined to the A section of the second part, and the two surfaces called B in the second and third parts are also connected.

Example 1



You can see that the assembly is correct. The parts may be turned around or turned over. In each problem, the same parts are used in all of the possible assemblies. Only one of the pictures has the parts put together correctly.

Now look at the practice problems below. When you have decided which is the correct assembly, **put an X in the box** above that picture.

PRACTICE PROBLEMS

	<input type="checkbox"/>				
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ANSWER KEY

GENERAL MATH

2 POINTS EACH

1. C
2. A
3. A
4. B
5. A
6. C
7. A
8. A
9. B
10. C
11. C
12. C
13. A
14. B
15. A
16. C
17. B
18. A

WORKKEY ASSESSMENT

2 POINTS EACH

1. B
2. C
3. C
4. A
5. C

ALGEBRA

4 POINTS EACH

1. B
2. A
3. C
4. A

ANSWER KEY

READING COMPREHENSION

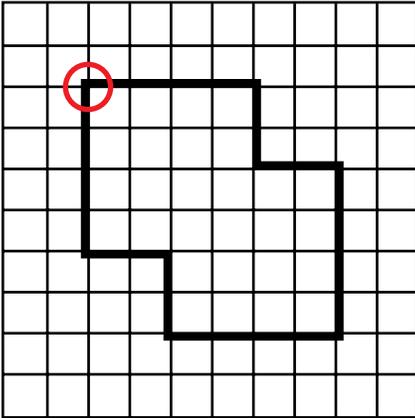
4 POINTS EACH

1. C
2. D
3. C

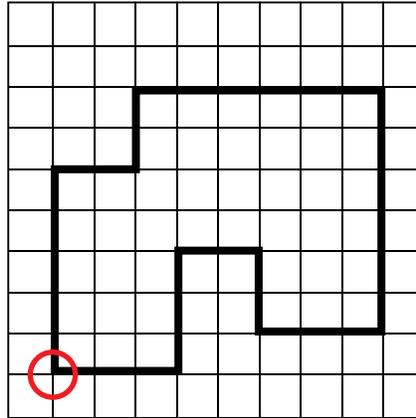
GEOMETRIC SHAPES

3 POINTS EACH

PART I



PART II



GEOMETRIC SHAPES | SIMPLE FIGURES

5 POINTS EACH

- Drawing 1. E
Drawing 2. B

SPACIAL AWARENESS

5 POINTS EACH

- Problem A. 3
Problem B. 4