



# ROADS TO JOBS

Life Skills for Construction Careers

# BUILD YOUR ROAD TO JOBS

Basic Math Skills for Entry-Level Job  
Candidates



QUEST CORPORATION OF AMERICA

# Why do I need to know math to work in road construction?

- To determine how wide a road should be?
- To determine the water capacity of ditches and culverts?
- How much asphalt will be needed to pave a road?
- How much weight can a truck safely haul?
- Understand the scales of plans and profile sheets.
- Used in survey, design and landscaping.



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As you advance in your construction career you may be required to know more advanced math, algebra and geometry.

For now, we will review basic mathematical calculations:

- **Addition**
- **Subtraction**
- **Multiplication**
- **Division**



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# ADDING WHOLE NUMBERS



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# You probably will remember everything about adding whole number .. but let's see.

- ▶ Try adding these numbers without the use of a calculator:

45, 20, 3, 17

- ▶ One - Line up your columns from the right.

$$\begin{array}{r} 45 \\ 20 \\ 3 \\ \hline +17 \end{array}$$

- ▶ Two - Start at the top of the right column and add down.

↓ Add down

$$\begin{array}{r} 45 \\ 20 \\ 3 \\ \hline +17 \\ \hline 5 \end{array}$$


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- ▶ Three - Carry over to the left column

$$\begin{array}{r} 1 \leftarrow \text{Carry Digit} \\ 45 \\ 20 \\ 3 \\ +17 \\ \hline 5 \end{array}$$

- ▶ Four - Add the second column and write the answer in the answer space.

$$\begin{array}{r} 45 \\ 20 \\ 3 \\ +17 \\ \hline 85 \end{array}$$

# SUBTRACTING WHOLE NUMBERS



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# We refreshed our math, now let's try subtracting. Same steps.

- ▶ Sample problem:  $394 - 72 =$
- ▶ One - Line up whole numbers from the right

$$\begin{array}{r} 394 \\ -72 \\ \hline \end{array}$$

- ▶ Two - Subtract from right to left

$$\begin{array}{r} 394 \\ -72 \\ \hline 22 \end{array}$$

- ▶ Three - Borrow if you need to, in this case you do not have to. Subtract third column and write answer in space.

$$\begin{array}{r} 394 \\ -72 \\ \hline 322 \end{array}$$



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# Try these on your own

► Add these:  $3+31+430+27=$

$$\begin{array}{r} 430 \\ 27 \\ 31 \\ + \quad 3 \\ \hline 491 \end{array}$$

► Subtract these:  $1439-749=$

$$\begin{array}{r} 1439 \\ - 749 \\ \hline 690 \end{array}$$

# KEY POINTS TO REMEMBER

- ▶ Practice working neatly -- using clearly written digits.
- ▶ Line up columns of whole numbers from the right.
- ▶ Put your answers in the correct places.
- ▶ Use lined or cross-section paper to help.



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# MULTIPLICATION

- ▶ Three terms used in multiplication:
  - ▶ Original value
  - ▶ Multiplier
  - ▶ Answer
- ▶ Four symbols are used to indicate multiplication:
  1. The times sign  $\times$
  2. Parentheses  $()$
  3. A dot  $*$
  4. Letters placed side by side - LW, for instance, meaning length times width

# ALIGNMENT

- ▶ Numbers are lined up from the right for multiplication -- without regard to decimal points.
- ▶ Use the longer number as the original value, the shorter as the multiplier.
- ▶ No decimal points or zeros are used to change whole numbers into decimal numbers for multiplication.
- ▶ Always line up the numbers from the right without regard to decimal points

▶  $91.11 \times 0.211$  becomes

$$\begin{array}{r} 91.11 \\ \times 0.211 \\ \hline \end{array}$$



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# TRY THESE:

$$22 \times 3.6 =$$

$$.46 \times 1.8 =$$



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# ANSWERS:

$$\begin{array}{r} 22 \\ \times 3.6 \\ \hline 79.2 \end{array}$$

$$\begin{array}{r} 1.8 \\ \times .46 \\ \hline .828 \end{array}$$



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# DIVISION

- ▶ Three terms used in division

- ▶ Original Value
- ▶ Divider
- ▶ Answer

- ▶ Symbols used:

- ▶ The division sign -  $\div$
- ▶ The fraction sign, as in  $200/50$  or
- ▶ The division box:  $6 \overline{)32}$



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# Dividing is finding out how many times the divider will go into the original value.

- ▶ Divide 526 by 5 -- to one decimal place.
- ▶ 526 would be your original value, which goes under the division box
- ▶ 5 would be your divider, which goes on the outside of the division box
- ▶  $5 \overline{)526} = 105.2$



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[http://wbt.dot.state.fl.us/ois/Construction/  
1ConstructionMath/cmchapters.htm](http://wbt.dot.state.fl.us/ois/Construction/1ConstructionMath/cmchapters.htm)



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