

Math Moves U:
“Math is in the world all around us. Morning, noon, and night-how does math move you or the world around you?”

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**Morning, Noon, and
Night: Sports Are Always
On My Mind!
Especially The NFL!**

Who will win each week?

Who is a better team?

What is wrong with the teams that
keep losing?

Which quarterbacks are dominating
the league?

What team has the best chance to
win the Super bowl?

**Math is EVERYWHERE
in Football!**

Fractions are used in calculating
pass completions and winning
percentages.

Math is used to purchase game
tickets at the cheapest price
available.

Negative and positive integers are
used to calculate total rushing yards.



Math is everywhere in football especially with fractions!

Alex Smith completed 8 of 20 passes in the first half. If he had the same pass completion percentage in the second half, how many passes did he complete if he attempted 35 passes in the second half?

In order to figure this out you must set up a proportion.



$$\frac{8}{20} = \frac{x}{35}$$

After you set up the proportion you must cross multiply.

$$\frac{8}{20} = \frac{x}{35}$$

Next you must put it into an equation.

$$20x = 280$$

Now you must solve.

$$\frac{\cancel{20}x}{\cancel{20}} = \frac{280}{20} \quad x = 14$$

Alex Smith completed 14 passes in the second half!

Which is the better buy per ticket?

Ticket Plan 1



StubHub tickets cost:

4 tickets for \$276

$\$276 / 4 = \69.00

Each Ticket = \$69

Ticket Plan 2



ticketmaster

Ticketmaster tickets cost:

6 tickets for \$402

$\$402 / 6 = \67.00

Each Ticket = \$67

**Ticketmaster is the better buy per ticket because
\$67.00 is < \$69.00!**

Calculating Fantasy Points:

How many points did each wide receiver earn for their fantasy teams?

In Week 7, Victor Cruz has 18 catches for 46 yards and 1 touchdown.

In Week 7, A.J. has 7 catches for 89 yards and 1 fumble.

$$46 \text{ yards} \times 0.1 \text{ pts/receiving yard} = 4.6 \text{ points}$$

$$1 \text{ TDs} \times 6 \text{ pts/TD} = 6 \text{ points}$$

$$4.6 + 6 = 10.6 \text{ points}$$

Victor Cruz earns 10.6 points!

$$89 \text{ yards} \times 0.1 \text{ pts/receiving yard} = 8.9 \text{ points}$$

$$1 \text{ fumble} \times (-2 \text{ pts)/fumble} = -2 \text{ points}$$

$$8.9 \text{ points} + (-2 \text{ points}) = 6.9 \text{ points}$$

A.J. Green earns only 6.9 points

Scoring Rules

Each TD is worth 6 pts

Each receiving yard is worth 0.1 pt

Each fumble is worth -2 pts

Running Back Yardage Positive and Negative

Against the Cincinnati Bengals, Matt Asiata rushed for X number of yards on 5 attempts. He gained 13 yards his first play, lost 5 yards the next play, he later gained 57 yards, afterwards he gained 23 yards, and finally he lost 2 yards. How many rushing yards did Matt Asiata gained?



- To solve, add the positives together and then add the negatives together.
- First I would add the positives numbers together. $13 + 57 + 23 = 93$
- Next I would add the negative numbers together. $(-5) + (-2) = -7$
- Finally I would add 93 and (-7)
 $93 + (-7) = 86$
- X = 86 yards rushing



Discrete and Continuous Situations in Football

In football there are many situations where you can have only a whole number not a portion. This is called discrete.

Meanwhile situations where you can have a fraction of a whole are considered continuous.



Yard markers on the football field are discrete because they are marked by one yard lines not half yard lines.

A football is also discrete because you can only have a whole football.

Jersey prices and clothing prices are continuous because the prices can be fractions of a dollar.

Sacks can be continuous or discrete because you can have half a sack or a whole sack.



Converting USA System to Metric System

Against the New York Jets, Lamar Miller, running back for the Miami Dolphins, rushed for 84 yards. How many meters did Lamar Miller rush for?



$$84 \cancel{\text{ yds}} \times \frac{3 \cancel{\text{ ft}}}{1 \cancel{\text{ yd}}} \times \frac{0.3 \text{ m}}{1 \cancel{\text{ ft}}}$$

$$\frac{84 \times 3 \times 0.3}{1} = 75.6 \text{ m}$$

Lamar Miller rushed for 84 yards or 75.6 meters.



Solving Inequalities

I want to buy a J.J. Watt jersey for \$85. I can save \$7 a week from my allowance. However, before I can buy the jersey I must repay my brother the \$20 I owe him. For how many weeks will I need to save before I can pay back my brother and buy a J.J. Watt jersey?



The first step is to set up an inequality:

$$7x - 20 \geq 85$$

Next step is to get x alone:

$$\begin{array}{r} 7x - 20 \geq 85 \\ \underline{+20} \quad + \quad \underline{20} \\ 7x \geq 105 \end{array}$$

After that you must solve for X:

$$\frac{7x}{7} \geq \frac{105}{7}$$

Finally you must divide:

$$x \geq 15 \text{ weeks}$$

It will take me at least 15 weeks to pay back my brother and buy my jersey!

Pass Completion Percentage: Ordering Quarterbacks From Least to Greatest

In 2013, QB statistics were as follows:

Peyton Manning

450 completions on 659 attempts

Matt Ryan

439 completions on 651 attempts

Cam Newton

292 completions on 473 attempts

Philip Rivers

378 completions on 544 attempts

Drew Brees

446 completions on 650 attempts

To calculate a quarterback's pass completion percentage, divide the number of completions by the number of attempts then multiple by 100.

Peyton Manning

$$450 \div 659 = 0.682$$

$$0.682 \times 100 = 68.2\%$$

Matt Ryan

$$439 \div 651 = 0.674$$

$$0.674 \times 100 = 67.4\%$$

Cam Newton

$$292 \div 473 = 0.617$$

$$0.617 \times 100 = 61.7\%$$

Philip Rivers

$$378 \div 544 = 0.694$$

$$0.694 \times 100 = 69.4\%$$

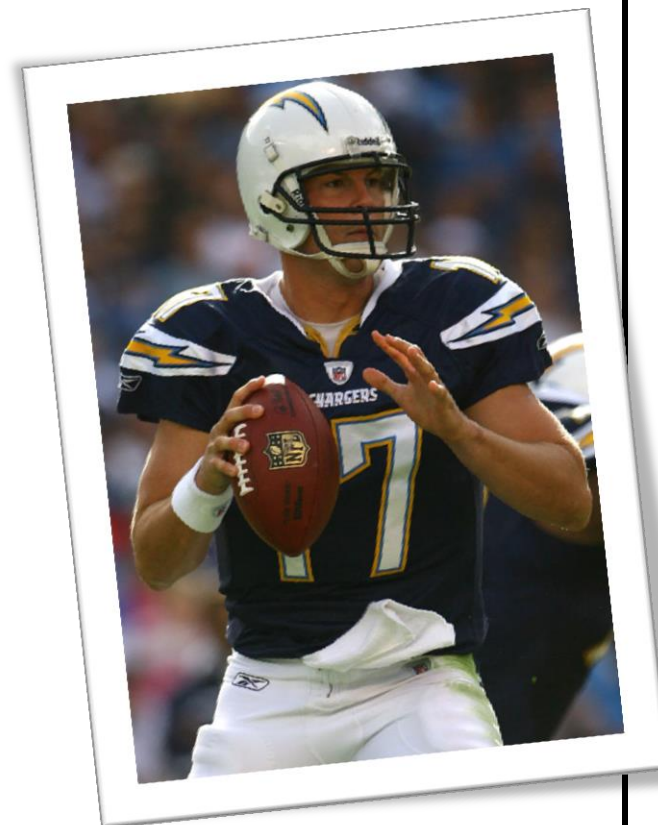
Drew Brees

$$446 \div 650 = 0.686$$

$$0.686 \times 100 = 68.6\%$$

From least to greatest:

- | | |
|-------------------|-------|
| 5. Cam Newton | 61.7% |
| 4. Matt Ryan | 67.4% |
| 3. Peyton Manning | 68.2% |
| 2. Drew Brees | 68.6% |
| 1. Philip Rivers | 69.4% |



Football Makes Learning Math Fun!



Things I've learned:

- 🏈 I never realized how much fun math could be!
- 🏈 Using football to learn math really works!
- 🏈 Math is not only found in the classroom. It is a part of sports, home life, and our daily tasks!
- 🏈 Math is all around us... Morning, noon, and night!