Homework Packet for 9th & 10th Grade

Week 9

Name _____

Week Starts on / Due on _____]____]__

Each week you are to complete your homework packet and turn it on the day the teacher assigns. Part of the homework is reading 45 minutes a day. This can be done in after school care and they can read to a younger sibling or an adult as well. Weekend reading is encouraged, each week students can get credit for reading on Saturday and/or Sunday. Reading each day is very important to help each student get better at this skill.

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Weekly Home Reading Record

Day	Reading Material	Amount of Time	How many pages
Weekend			
Monday			
Tuesday			
Wednesday			
Thursday			

Total Reading Time: Hours _____ Minutes _____

Student Signature: _____

Date: _____

Parents Signature: _____

Date: _____

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GRADES 9-10

VOCABULARY BUILDER
WEEK 9
Daily Activity

Monday : Write out the definition of the vocabulary word and the source where you found it. (*note do not use wikipedia*) and break the word down in Syllables.
Example: ABSTRUSE: 2 Syllables , **ab-struse and it sounds like ab-stroos.**

Tuesday : Write a sentence with the vocabulary word (different than the definition of the vocabulary word).

Wednesday : Write a paragraph with the vocabulary word (different than the definition and the sentence with the vocabulary word).

Thursday : Write a 3 to 5 paragraph essay with all the vocabulary words (different than the definition, and sentences you used with the vocabulary word)

Friday : **Turn in all of your work.**

This week's vocabulary words are:

EXTRAPOLATE	FACETIOUS	FEASIBLE
EXTRAVAGANT	FACILITATE	FEIGN
EXTROVERTED	FALLIBLE	FELICITY
EXUDE	FALSIFY	FERVENT
FACADE	FASTIDIOUS	FICKLE

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Passage IV

NATURAL SCIENCE: This passage is adapted from the article "The Jaws That Jump" by Adam Summers (©2006 by Natural History Magazine, Inc.).

Recently I was reminded of just how powerful ants can be when inflicting damage on intruders. A team of biomechanists has studied the incredibly speedy bite of a group of Central and South American ants. The team clocked the bite as the fastest on the planet—and discovered that it also gives the ants the unique ability to jump with their jaws, adding to an impressive array of already known defenses.

Trap-jaw ants nest in leaf litter, rather than underground or in mounds. There they often feed on well-armored and elusive prey, including other species of ants. As they stalk their dinner, the trap-jaws hold their mandibles wide apart, often cocked open at 180 degrees or more by a latch mechanism. When minute trigger hairs on the inner edge of the mandible come in contact with something, the jaws snap shut at speeds now known to reach 145 miles per hour. No passerby could outrace that. The astoundingly high speed gives the jaws, despite their light weight, enough force to crack open the armor of most prey and get at the tasty meat inside.

The key to the jaws' speed (and their even more amazing acceleration) is that the release comes from stored energy produced by the strong but slow muscles of the jaw. Think how an archer slowly draws an arrow in a bowstring against the flex of a bow: nearly all the energy from the archer's muscles pours into the flexing of the bow. When released, the energy stored in the bow wings the arrow toward its target much faster than the archer could by throwing the arrow like a javelin. The biomechanics of energy storage is the domain of Sheila N. Patek and Joseph E. Baio, both biomechanists at the University of California, Berkeley. They teamed up with two ant experts, Brian L. Fisher of the California Academy of Sciences in San Francisco and Andrew V. Suarez of the University of Illinois at Urbana-Champaign, to look at the trap-jaw ant *Odontomachus bauri*.

Fisher, Suarez, and other field biologists had already noted that catching *O. bauri* was like grabbing for popping popcorn—and very hot popcorn at that, because a painful sting goes with an ant's trap-jaw bite. The insects bounced around in a dizzying frenzy and propelled themselves many times their body length when biologists or smaller intruders approached them. Patek and Baio made high-speed video images of their movements, and discovered that the secret of their self-propulsion was the well-executed "firing" of their mandibles. They also observed that mandibles started to decelerate before they meet—possibly to avoid self-inflicted damage. Most important, the ants had two distinct modes of aerial locomotion.

In the so-called escape jump, an ant orients its head and jaws perpendicular to the ground, then slams its face straight down. That triggers the cocked mandibles to release with a force 400 times the ant's body weight, launching the insect ten or more body lengths nearly straight into the air. The ant doesn't seem to go in any particular direction, but the jump is presumably fast and unpredictable enough to help the insect evade, say, the probing tongue of a lizard. Not only can the jumping ant gain height and sow confusion, but it may also get to a new vantage point from which to relaunch an attack.

The second kind of jaw-propelled locomotion is even more common than escape jumping. If an intruder enters the ants' nest, one of the ants bangs its jaws against the intruder, which triggers the trap-jaw and propels the interloper (if small enough) in one direction, out of the nest, and the ant in the other. Often the force sends the ant skimming an inch off the ground for nearly a foot. The attack, for obvious reasons, is known as the "bouncer defense." In the wild, gangs of defending ants team up to attack hostile strangers, sending them head over heels out of the nest.

From an evolutionary point of view, the trap-jaws are an intriguing story. The ants clearly evolved an entirely new function, propulsion, for a system that was already useful—chewing up prey. Several lineages of trap-jaw ants have independently hit on the tactic of storing energy in their jaws to penetrate well-defended prey. In *Odontomachus*, the horizontal, bouncer-defense jump could have arisen out of attempts to bite intruders, but the high, escape jump—with jaws aimed directly at the ground—must have arisen from a different, perhaps accidental kind of behavior. Such a serendipitous event would have been a rare instance in which banging one's head against the ground got good results.

31. The primary purpose of the passage is to:

- **A.** provide an overview of the mechanics and key operations of the jaws of trap-jaw ants.
- **B.** analyze Patek and Baio's techniques for filming two defensive maneuvers of trap-jaw ants.
- **C.** compare the jaws of *Odontomachus bauri* to the jaws of other species of ants.
- **D.** describe the evolution of the ability of trap-jaw ants to perform an escape jump.

32. The sentence in lines 73–75 and the last sentence of the passage are examples of the author's rhetorical technique of:

- **F.** weaving sarcasm into a mostly casual and playful article.
- **G.** interjecting a lighthearted tone into a primarily technical article.
- **H.** integrating a slightly combative tone into an article that mostly praises two scientists' work.
- **J.** incorporating personal anecdotes into an article that mostly reports data.

33. As it is used in lines 81–82, the phrase *well-defended prey* most nearly refers to prey that:

- **A.** have a hard outer shell.
- **B.** attack with a lethal bite.
- **C.** travel and attack in groups.
- **D.** move quickly.

34. The passage makes clear that the main source of the speed of the jaws of the trap-jaw ant is the:

- **F.** ease of movement of the hinge of the jaw.
- **G.** continuous, steady firing of the jaw's mandibles.
- **H.** light weight of the jaw in relation to the ant's body weight.
- **J.** release of energy stored by muscles of the jaw.

35. The author uses the analogy of trying to grab popcorn as it pops in order to describe the trap-jaw ants' ability to:

- **A.** generate heat with their jaw movements.
- **B.** move to high ground in order to attack prey.
- **C.** attack intruders by tossing them out of the nest.
- **D.** bounce around frantically when intruders approach.

36. One main purpose of the last paragraph is to suggest that unlike their bouncer-defense jump, the trap-jaw ants' escape jump may have arisen through:

- **F.** the ants' trying and failing to bite intruders.
- **G.** a change in the structure of the mandibles of several lineages of ants.
- **H.** an accidental behavior of the ants.
- **J.** the ants' experiencing a positive outcome when they would attack in a large group.

37. As it is used in line 31, the word *domain* most nearly means:

- **A.** living space.
- **B.** area of expertise.
- **C.** taxonomic category.
- **D.** local jurisdiction.

38. The passage points to which of the following as a characteristic of trap-jaw ants' mandibles that prevents the ants from harming themselves with their powerful bite?

- **F.** A hinge prevents the mandibles from snapping together forcefully.
- **G.** Mandibles with cushioned inner edges provide a buffer when the mandibles snap shut.
- **H.** A latch mechanism prevents the mandibles from closing completely.
- **J.** The mandibles begin to decelerate before they meet.

39. As described in the passage, one benefit of the trap-jaw ant's escape jump is that it allows an ant to:

- **A.** land in position to launch a new attack on a predator.
- **B.** confuse a predator with a quick, sudden sting.
- **C.** signal to other ants using a predictable movement.
- **D.** point itself in whichever direction it chooses to escape.

40. When a trap-jaw ant uses the bouncer-defense jump effectively on an intruder, which creature(s), if any, will be propelled either out of the nest or in another direction?

- **F.** The intruder only
- **G.** The attacking ant only
- **H.** The attacking ant and the intruder
- **J.** Neither the attacking ant nor the intruder

4-Digit by 2-Digit Division (E)

Name: _____ Date: _____

Calculate each quotient.

$54\overline{)8085}$	$37\overline{)7084}$	$44\overline{)7786}$
$51\overline{)7337}$	$12\overline{)1584}$	$16\overline{)1881}$
$21\overline{)7207}$	$32\overline{)7254}$	$32\overline{)1177}$

GRADES 9-10

WEEK 9
Use R.A.C.E. Strategy for Math

Example:
Joshua has 32 donuts. He organizes them in boxes. Each box holds 12 donuts. How many boxes of donuts will Joshua have?

R (Restate the question) in your own words	Joshua will have ____ boxes of donuts.
A (Answer the question)	Joshua will have 3 boxes of donuts.
C (Cite the evidence)	I will determine how many boxes of 12 are required to fit all the donuts by dividing the number of donuts (32) by the number that can fit in each box (12). If I need part of a box I will round the solution up to the nearest whole number. 32 ÷ 12 = 2.666 Rounded up is 3
E (Explanation)	Joshua will have 3 boxes of donuts. I determined how many boxes of 12 are required to fit all the donuts by dividing the number of donuts (32) by the number that can fit in each box (12). Since I needed slightly more than two boxes, I rounded my solution to the nearest whole number.

WORD PROBLEMS
1. Angela was making rock candy. She mixed 6 gallons of a 90% sugar solution with 9 gallons of another sugar solution to get an 84% sugar solution. What percent sugar concentration was the second solution?

2. An alloy of tin is 16% tin. How much tin, calculated to the nearest tenth of a pound, must be added to make 820 pounds of alloy that is 18% tin?

3. A vat contains 100 liters of a 40% vinegar solution. How much acid must be added to increase the acidity to 60%?

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QUESTION 1

R (Restate the question) in your own words	
A (Answer the question)	
C (Cite the evidence)	
E (Explanation)	

QUESTION 2

R (Restate the question) in your own words	
A (Answer the question)	
C (Cite the evidence)	
E (Explanation)	

QUESTION 3

R (Restate the question) in your own words	
A (Answer the question)	
C (Cite the evidence)	
E (Explanation)	

MAKE SURE THAT ALL YOUR WORK IS COMPLETED BEFORE YOU TURN IT IN.