# Tucson International Academy

## *Academia Internacional de Tucson*

**Homework Packet for Twelveth Grade**

**Week 14**

**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 Time Reading: Hours_____ Minutes_____

Student Signature_____ Date_____

Parent Signature_____ Date_____

**Questions 21-30 are based on the following passage.**

This passage is adapted from Thor Hanson, *Feathers*. ©2011 by Thor Hanson. Scientists have long debated how the ancestors of birds evolved the ability to fly. The ground-up theory assumes they were fleet-footed ground dwellers that captured prey by leaping and flapping their upper limbs. The tree-down theory assumes they were tree climbers that leapt and glided among branches.

At field sites around the world, Ken Dial saw a pattern in how young pheasants, quail, tinamous, and other ground birds ran along behind their parents. "They jumped up like popcorn," he said, describing how they would flap their half-formed wings and take short hops into the air. So when a group of graduate students challenged him to come up with new data on the age-old ground-up-tree-down debate, he designed a project to see what clues might lie in how baby game birds learned to fly.

Ken settled on the Chukar Partridge as a model species, but he might not have made his discovery without a key piece of advice from the local rancher in Montana who was supplying him with birds. When the cowboy stopped by to see how things were going, Ken showed him his nice, tidy laboratory setup and explained how the birds' first hops and flights would be measured. The rancher was incredulous. "He took one look and said, in pretty colorful language, 'What are those birds doing on the ground? They hate to be on the ground! Give them something to climb on!' " At first it seemed unnatural—ground birds don't like the ground? But as he thought about it Ken realized that all the species he'd watched in the wild preferred to rest on ledges, low branches, or other elevated perches where they were safe from predators. They really only used the ground for feeding and traveling. So he brought in some hay bales for the Chukars to perch on and then left his son in charge of feeding and data collection while he went away on a short work trip.

Barely a teenager at the time, young Terry Dial was visibly upset when his father got back. "I asked him how it went," Ken recalled, "and he said, 'Terrible! The birds are cheating!' " Instead of flying up to their perches, the baby Chukars were using their legs. Time and again Terry had watched them run right up the side of a hay bale, flapping all the while. Ken dashed out to see for himself, and that was the "aha" moment. "The birds were using their wings and legs cooperatively," he told me, and that single observation opened up a world of possibilities.

Working together with Terry (who has since gone on to study animal locomotion), Ken came up with a series of ingenious experiments, filming the birds as they raced up textured ramps tilted at increasing angles. As the incline increased, the partridges began to flap, but they angled their wings differently from birds in flight. They aimed their flapping down and backward, using the force not for lift but to keep their feet firmly pressed against the ramp. "It's like the spoiler on the back of a race car," he explained, which is a very apt analogy. In Formula One racing, spoilers are the big aerodynamic fins that push the cars downward as they speed along, increasing traction and handling. The birds were doing the very same thing with their wings to help them scramble up otherwise impossible slopes.

Ken called the technique WAIR, for wing-assisted incline running, and went on to document it in a wide range of species. It not only allowed young birds to climb vertical surfaces within the first few weeks of life but also gave adults an energy-efficient alternative to flying. In the Chukar experiments, adults regularly used WAIR to ascend ramps steeper than 90 degrees, essentially running up the wall and onto the ceiling.

In an evolutionary context, WAIR takes on surprising explanatory powers. With one fell swoop, the Dials came up with a viable origin for the flapping flight stroke of birds (something gliding animals don't do and thus a shortcoming of the tree-down theory) and an aerodynamic function for half-formed wings (one of the main drawbacks to the ground-up hypothesis).

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CONTINUE

**21**

Which choice best reflects the overall sequence of events in the passage?

A) An experiment is proposed but proves unworkable; a less ambitious experiment is attempted, and it yields data that give rise to a new set of questions.

B) A new discovery leads to reconsideration of a theory; a classic study is adapted, and the results are summarized.

C) An anomaly is observed and simulated experimentally; the results are compared with previous findings, and a novel hypothesis is proposed.

D) An unexpected finding arises during the early phase of a study; the study is modified in response to this finding, and the results are interpreted and evaluated.

**22**

As used in line 7, "challenged" most nearly means

A) dared.

B) required.

C) disputed with.

D) competed with.

**23**

Which statement best captures Ken Dial's central assumption in setting up his research?

A) The acquisition of flight in young birds sheds light on the acquisition of flight in their evolutionary ancestors.

B) The tendency of certain young birds to jump erratically is a somewhat recent evolved behavior.

C) Young birds in a controlled research setting are less likely than birds in the wild to require perches when at rest.

D) Ground-dwelling and tree-climbing predecessors to birds evolved in parallel.

**24**

Which choice provides the best evidence for the answer to the previous question?

A) Lines 1-4 ("At field . . . parents")

B) Lines 6-11 ("So when . . . fly")

C) Lines 16-19 ("When . . . measured")

D) Lines 23-24 ("At first . . . the ground")

**25**

In the second paragraph (lines 12-32), the incident involving the local rancher mainly serves to

A) reveal Ken Dial's motivation for undertaking his project.

B) underscore certain differences between laboratory and field research.

C) show how an unanticipated piece of information influenced Ken Dial's research.

D) introduce a key contributor to the tree-down theory.

**26**

After Ken Dial had his "'aha' moment" (line 41), he

A) tried to train the birds to fly to their perches.

B) studied videos to determine why the birds no longer hopped.

C) observed how the birds dealt with gradually steeper inclines.

D) consulted with other researchers who had studied Chukar Partridges.

**27**

The passage identifies which of the following as a factor that facilitated the baby Chukars' traction on steep ramps?

A) The speed with which they climbed

B) The position of their flapping wings

C) The alternation of wing and foot movement

D) Their continual hopping motions

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CONTINUE

28

As used in line 61, "document" most nearly means

A) portray.

B) record.

C) publish.

D) process.

29

What can reasonably be inferred about gliding animals from the passage?

A) Their young tend to hop along beside their parents instead of flying beside them.

B) Their method of locomotion is similar to that of ground birds.

C) They use the ground for feeding more often than for perching.

D) They do not use a flapping stroke to aid in climbing slopes.

30

Which choice provides the best evidence for the answer to the previous question?

A) Lines 4-6 ("They jumped . . . air")

B) Lines 28-29 ("They really . . . traveling")

C) Lines 57-59 ("The birds . . . slopes")

D) Lines 72-74 ("something . . . theory")

**Questions 31-41 are based on the following passages.**

Passage 1 is adapted from Talleyrand et al., *Report on Public Instruction*. Originally published in 1791. Passage 2 is adapted from Mary Wollstonecraft, *A Vindication of the Rights of Woman*. Originally published in 1792. Talleyrand was a French diplomat; the *Report* was a plan for national education. Wollstonecraft, a British novelist and political writer, wrote *Vindication* in response to Talleyrand.

**Passage 1**

That half the human race is excluded by the other half from any participation in government; that they are native by birth but foreign by law in the very land where they were born; and that they are property-owners yet have no direct influence or representation: are all political phenomena apparently impossible to explain on abstract principle. But on another level of ideas, the question changes and may be easily resolved. The purpose of all these institutions must be the happiness of the greatest number. Everything that leads us farther from this purpose is in error; everything that brings us closer is truth. If the exclusion from public employments decreed against women leads to a greater sum of mutual happiness for the two sexes, then this becomes a law that all Societies have been compelled to acknowledge and sanction.

Any other ambition would be a reversal of our primary destinies; and it will never be in women's interest to change the assignment they have received.

It seems to us incontestable that our common happiness, above all that of women, requires that they never aspire to the exercise of political rights and functions. Here we must seek their interests in the wishes of nature. Is it not apparent, that their delicate constitutions, their peaceful inclinations, and the many duties of motherhood, set them apart from strenuous habits and onerous duties, and summon them to gentle occupations and the cares of the home? And is it not evident that the great conserving principle of Societies, which makes the division of powers a source of harmony, has been expressed and revealed by nature itself, when it divided the functions of the two sexes in so obviously distinct a manner? This is sufficient; we need not invoke principles that are inapplicable to the question. Let us not make rivals of life's companions. You must, you truly must allow the persistence of a union that no interest, no rivalry, can possibly undo. Understand that the good of all demands this of you.

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CONTINUE

**Passage 2**

Contending for the rights of woman, my main argument is built on this simple principle, that if she be not prepared by education to become the companion of man, she will stop the progress of knowledge and virtue; for truth must be common to all, or it will be inefficacious with respect to its influence on general practice. And how can woman be expected to co-operate unless she know why she ought to be virtuous? unless freedom strengthen her reason till she comprehend her duty, and see in what manner it is connected with her real good? If children are to be educated to understand the true principle of patriotism, their mother must be a patriot; and the love of mankind, from which an orderly train of virtues spring, can only be produced by considering the moral and civil interest of mankind; but the education and situation of woman, at present, shuts her out from such investigations. . . .

Consider, sir, dispassionately, these observations—for a glimpse of this truth seemed to open before you when you observed, "that to see one half of the human race excluded by the other from all participation of government, was a political phenomenon that, according to abstract principles, it was impossible to explain." If so, on what does your constitution rest? If the abstract rights of man will bear discussion and explanation, those of woman, by a parity of reasoning, will not shrink from the same test: though a different opinion prevails in this country, built on the very arguments which you use to justify the oppression of woman—prescription.

Consider—I address you as a legislator—whether, when men contend for their freedom, and to be allowed to judge for themselves respecting their own happiness, it be not inconsistent and unjust to subjugate women, even though you firmly believe that you are acting in the manner best calculated to promote their happiness? Who made man the exclusive judge, if woman partake with him the gift of reason?

In this style, argue tyrants of every denomination, from the weak king to the weak father of a family; they are all eager to crush reason; yet always assert that they usurp its throne only to be useful. Do you not act a similar part, when you force all women, by denying them civil and political rights, to remain immured in their families groping in the dark?

31

As used in line 21, "common" most nearly means

A) average.
B) shared.
C) coarse.
D) similar.

32

It can be inferred that the authors of Passage 1 believe that running a household and raising children

A) are rewarding for men as well as for women.
B) yield less value for society than do the roles performed by men.
C) entail very few activities that are difficult or unpleasant.
D) require skills similar to those needed to run a country or a business.

33

Which choice provides the best evidence for the answer to the previous question?

A) Lines 4-6 ("they are . . . representation")
B) Lines 13-17 ("If the . . . sanction")
C) Lines 25-30 ("Is it . . . home")
D) Lines 30-35 ("And . . . manner")

34

According to the author of Passage 2, in order for society to progress, women must

A) enjoy personal happiness and financial security.
B) follow all currently prescribed social rules.
C) replace men as figures of power and authority.
D) receive an education comparable to that of men.

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CONTINUE

35

As used in line 50, "reason" most nearly means

A) motive.

B) sanity.

C) intellect.

D) explanation.

36

In Passage 2, the author claims that freedoms granted by society's leaders have

A) privileged one gender over the other.

B) resulted in a general reduction in individual virtue.

C) caused arguments about the nature of happiness.

D) ensured equality for all people.

37

Which choice provides the best evidence for the answer to the previous question?

A) Lines 41-45 ("Contending . . . virtue")

B) Lines 45-47 ("truth . . . practice")

C) Lines 65-66 ("If so . . . rest")

D) Lines 72-75 ("Consider . . . happiness")

38

In lines 61-65, the author of Passage 2 refers to a statement made in Passage 1 in order to

A) call into question the qualifications of the authors of Passage 1 regarding gender issues.

B) dispute the assertion made about women in the first sentence of Passage 1.

C) develop her argument by highlighting what she sees as flawed reasoning in Passage 1.

D) validate the concluding declarations made by the authors of Passage 1 about gender roles.

39

Which best describes the overall relationship between Passage 1 and Passage 2?

A) Passage 2 strongly challenges the point of view in Passage 1.

B) Passage 2 draws alternative conclusions from the evidence presented in Passage 1.

C) Passage 2 elaborates on the proposal presented in Passage 1.

D) Passage 2 restates in different terms the argument presented in Passage 1.

40

The authors of both passages would most likely agree with which of the following statements about women in the eighteenth century?

A) Their natural preferences were the same as those of men.

B) They needed a good education to be successful in society.

C) They were just as happy in life as men were.

D) They generally enjoyed fewer rights than men did.

41

How would the authors of Passage 1 most likely respond to the points made in the final paragraph of Passage 2?

A) Women are not naturally suited for the exercise of civil and political rights.

B) Men and women possess similar degrees of reasoning ability.

C) Women do not need to remain confined to their traditional family duties.

D) The principles of natural law should not be invoked when considering gender roles.

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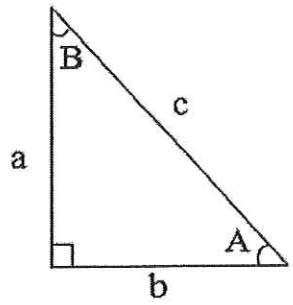


CONTINUE

# Pre-Calculus (12) Week 14

Name: Gary Young

#1 Points possible: 1. Total attempts: 1




Note: Triangle may not be drawn to scale.

Suppose a = 5 and c = 10.

Find:

b = _____

A = _____ degrees

B = _____ degrees

Give all answers to at least one decimal place. Give angles in **degrees**

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#2 Points possible: 1. Total attempts: 1

Find a possible formula for the trigonometric function whose values are in the following table.

| x | 0 | 2 | 4 | 6 | 8 | 10 | 12 |
|---|---|---|---|---|---|---|---|
| y | -4 | -10 | -4 | 2 | -4 | -10 | -4 |

y = _____

---

#3 Points possible: 1. Total attempts: 1

Outside temperature over a day can be modelled as a sinusoidal function. Suppose you know the high temperature for the day is 50 degrees and the low temperature of 40 degrees occurs at 6 AM. Assuming t is the number of hours since midnight, find an equation for the temperature, $D$, in terms of t.

$D(t)$ = _____

---

#4 Points possible: 1. Total attempts: 1

A population of rabbits oscillates 15 above and below an average of 130 during the year, hitting the lowest value in January (t = 0). Find an equation for the population, $P$, in terms of the months since January, $t$.

$P(t) =$ _____

What if the lowest value of the rabbit population occurred in April instead?

$P(t) =$ _____

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#5 Points possible: 1. Total attempts: 1

A Ferris wheel is 45 meters in diameter and boarded from a platform that is 3 meters above the ground. The six o'clock position on the Ferris wheel is level with the loading platform. The wheel completes 1 full revolution in 10 minutes. How many minutes of the ride are spent higher than 27 meters above the ground?

_____ minutes

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