

Chapter Four: Mundus

Chapter Topics

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duo viri stellam maximam in caelö vident. (illa pictūra est in mūrö catacombæ Christiänörum.)

Approaching this chapter

- This chapter introduces the third declension, so there is a lot of work with nouns. You will encounter a new set of noun endings, plus some variations on these endings (for "i-stems" and adjectives). It is important to get the main set of endings down quickly, but the variations are less important and you can work on them when you're confident with the regular third declension endings.
- The vocabulary is still at the end, but a focus vocabulary for the first part of the chapter follows the Mundus section.
- This chapter has three appendices. Two are paradigms for comparisons: One that shows all third declension variations; and one that shows first, second and third declension nouns for comparison. This is ideal for working on adjective agreement. The third appendix is an optional section on identifying i-stems.

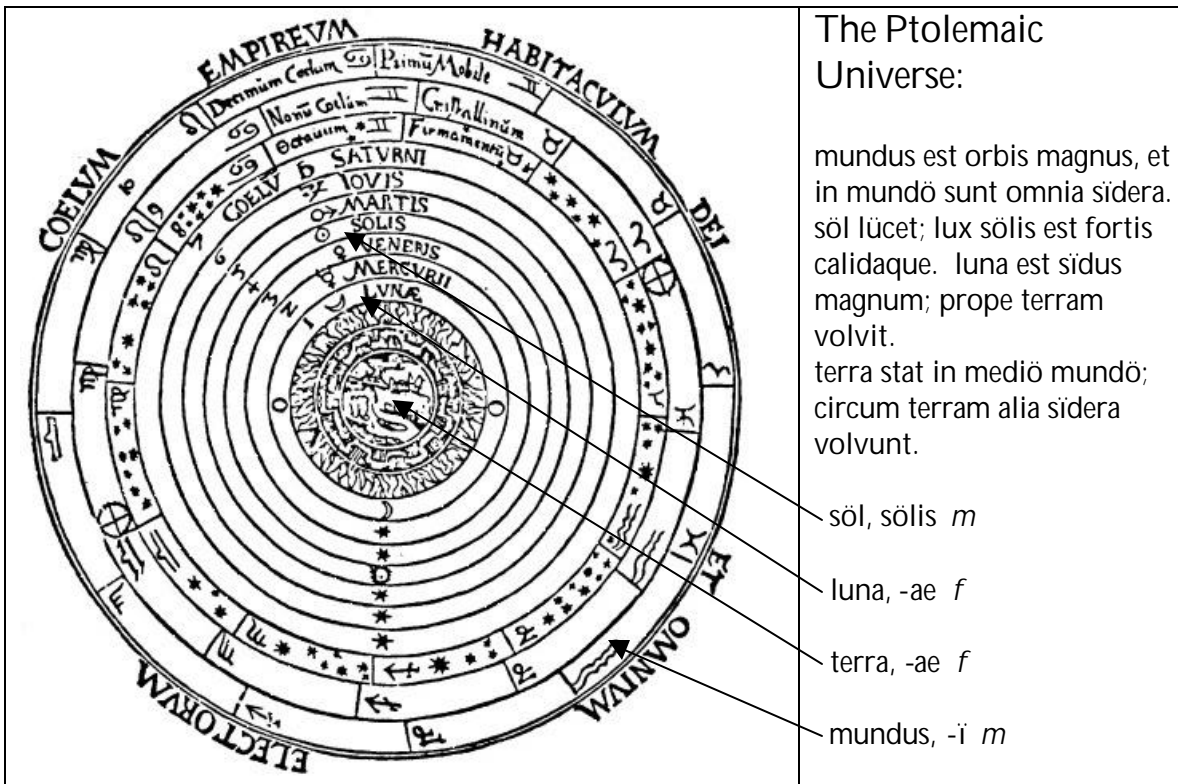
I. Mundus *The Universe*

Since the 6th century BCE, Greek scientists had been observing, measuring, calculating, and trying to explain the nature of the universe, and Roman scholars followed in their wake. They often came close to what we now think of as "scientific methods," in that they constructed theories from their observations, then questioned these hypotheses and tested them by further observations and experiments. However, in contrast to good modern science, they also typically used analogies and anecdotal evidence to prove their arguments.

However brilliant ancient scientists were, they worked at a great disadvantage to the scientists of the Renaissance and later, since Roman technology had not yet developed some crucial tools for observing the universe. They did not have telescopes or microscopes, for example: the technology for measuring and grinding glass lenses was far in the future. All astronomical observations had to be

done with the naked eye, leading to imprecisions we can easily avoid. The traditional Roman way of measuring time was so aligned to the natural world that hours varied in length depending on the time of year (longer in summer, because the days were longer). Recognizing this disadvantage, scientists developed water-clocks and sand-clocks for keeping track of time accurately, but obviously the minute time measurements that aid modern astronomy were not a factor in ancient Rome. Likewise, there was no accurate way to measure temperature or barometric pressure.

Despite these limitations in their measuring apparatus, the Romans made use of what they did have: thorough knowledge of arithmetic and geometry, thorough knowledge of the constellations and the changing skies across seasons and latitudes, and the fruits of their educational system, which emphasized logical thinking and keen observation.



At the beginning of his 37-book work on natural history, Pliny describes the way the universe hangs together, speaking both scientifically and philosophically. He describes the Ptolemaic system, a world view developed by the astronomer Ptolemaius in about 150 CE. According to this view, the universe (**mundus, -i m**) is a vast sphere (**orbis, orbis m**), in which the earth and heavens are contained – a closed system. (Pliny comments that speculation about what lies outside the universe is useless at this point – either there are other **mundi** just like ours, or not, or there are other **mundi** but they are different; we're not likely to find out, and all we really need to know is here, in our own **mundus**.)

Inside the sphere (**in orbe**) is earth (**terra, -ae f**), which is also a sphere. **terra** is in the center of the **mundus**, and the whole **mundus** spins (**volvö, -ere, volvi, volütus, revolve**). (The idea that Earth is the center of the universe changed only slowly. Copernicus, in 1543, was the first to offer a model in which the sun rather

than the earth was the center of the universe, and his book was banned until 1822.) The Romans often used the term **orbis terrarum**, *the circle of lands*, to mean something like the English expression, "the whole world."

Around the earth is air (**āēr, āeris m**, also called **spīritus**), which extends to some unknown distance, and on top of this blanket of **āēr** is **aether**, which is a rarified, thin, fiery substance. Around the earth, the stars revolve. There are several words for stars, all of which have English cognates: **astrum, -ī n**, and **stella, -ae f** are commonly used, but in scientifically describing the composition of the **mundus**, Pliny favors the term **sīdus, sīderis n**, which comes into English more in scientific language (e.g. *sidereal*). Pliny explains that most of the stars are small and distant, possibly adhering to the inside surface of the **mundus**, but several **sīdera** (neuter plural) stand out, having their own distinct orbits around **terra**. These are named after the major gods of the Romans.

The farthest away of the major **sīdera** is called **sīdus Saturnī**, or *Saturn's star*. (**Saturnī** is genitive.) One step closer is **sīdus Iovis**, or *Jupiter's star* (from **Iuppiter, Iovis, m**, Jupiter). After that is **sīdus Martis**, or *Mars's star* (also sometimes known as **sīdus Herculis**, *Hercules's star* – a name that did not last). These three stars have fairly long orbits **per caelum**, *through the sky*. By now you realize that these **sīdera** are what we know as planets. Romans referred to a planet as a **sīdus errans**, or *wandering star*, to distinguish it from other stars with fixed orbits. (Our word *planet* comes from the Greek word that means "wandering.") The Romans thought of planets as *wandering stars* because (1) they are the size of stars and appear essentially the same (telescopes did not exist to show the different nature of planets), and (2) they change position in relation to other stars, moving along the Zodiac. The Zodiac was called **orbis signifer**. **signifer, -fera, -ferum** means, literally, *bearing images / signs*, which had a double meaning. You could say it *bore images* because it had XII constellations scattered across it, but you could also think of **signifer** as meaning, *bearing omens*, which would refer to the Zodiac's function in astrology and in reading portents. (Pliny has many negative things to say about such superstitions!)

The sun (**sōl, sōlis m**), is the brightest and most powerful of these **sīdera errantia** (n. pl.). The light and power of the sun inspires Pliny to describe its power in almost divine terms, as watching over the universe and governing its motions.

One step closer to **terra** than **sōl**, is the **sīdus Veneris**, *Venus's star*, which had a two-fold nature. It was known as both the morning star, the *light-bringer* (whose Latin name is **Lucifer**, from **lux, lūcis, f** *light*, and **ferō, ferre, f** *to carry or bear*), and the evening star, **Vesper**. Pliny attributes many important natural phenomena to Venus, including such things as creating dew which fertilizes the earth. Another step closer to **terra** is **sīdus Mercurīi** – though some people call it *Apollo's star* rather than *Mercury's star*. And the last of the **sīdera**, closest to **terra**, is the moon, **luna, -ae f**. Pliny calls the moon the *remedy of gloomy-shadows*, **remedium tenebrarum**, and discusses its many-faceted nature, including its phases, its reflection of the sun's light, its relationship to water on earth, eclipses, etc. Because we have learned so much from observing it, he also calls it **omnium quae in caelō pernosci potuerunt magistra**: *the teacher of all things which can be understood in the heavens*.

And of course, in the middle of the sphere, **in mediö orbe**, and in the middle of the universe, **in mediö mundö**, is **terra**, where human beings – **hominēs (homo, hominis m & f)** try to understand the nature of their world and its workings, the processes the Romans described as **rerum nätūra**, the natural world.

📍 **Practicum: The Ptolemaic Universe** 📍 Briefly describe the key factors of the Ptolemaic universe, including: What is at the center of the universe, what revolves and what doesn't, what the planets are, what are the main elements making up the universe.

Focus Vocabulary: Most of the new words up to the first reading section (p. 95) can be found in this vocabulary section, so focus your study on these words.

Nouns

äer, aeris m air
aetas, aetatis f age, period
astrum, -i n star
caelum, -i n sky
homo, hominis m & f human being
ignis, -ignis m fire (i-stem)
luna, -ae f moon
lux, lucis f light
mundus, -i m the world, the universe
nihil nothing (forms do not change)
nömen, nöminis n name
nox, noctis f night (i-stem)
orbis, orbis m sphere, circle (i-stem);
orbis terrarum, the whole world
sidus, -eris n star;
söl, sölis m sun
spiritus, spiritus m breath, spirit, air
 (fourth declension word)
stella, -ae f star
tempus, -oris n time

terra, -ae f the earth; land, country

Adjectives

brevis, breve short, brief
calidus, -a, -um hot
fortis, forte brave, strong
frigidus, -a, -um cold
medius, -a, -um the middle
omnis, omne all, every
proximus, -a, -um nearest, very near

Verbs

appellö (1) name, call
lüceö, -äre, luxi, luctus shine
pendeö, -äre, pependi hang (down)
sciö, -äre, scivi, scitus know
volvö, -ere, volvi, volutus revolve

Other Words

circum (+ acc.) around (prep.)
inter (+ acc.) between, among (prep.)

II. Third Declension Nouns

The third declension is simply another spelling group for nouns. The bad news is, you will have to learn another set of endings. The good news is, the **system** for using these nouns is exactly the same as with the first and second declensions: same form and information in the dictionary form, same cases, same uses, just different spellings for the case endings.

Third declension nouns can be masculine, feminine, or neuter. We're used to first declension being feminine, second declension masculine or neuter. Third has nouns of all three genders.

- **First declension:**
 - usually feminine: **luna, -ae f** moon
- **Second declension:**
 - usually masculine: **mundus, -ī m** universe
 - or neuter: **astrum, -ī n** star
- **Third declension:**
 - masculine: **sōl, sōlis m** sun
 - feminine: **lux, lūcis f** light
 - or neuter: **nōmen, nōminis n** name

Third declension nouns can be recognized in dictionary form by the -is ending on the genitive. With third declension forms, it is necessary to write out the genitive form.

- **sīdus, sīderis n** star
- **āēr, āeris m** air

Like all nouns, third declension nouns have a stem and endings.

You find the stem from the second part of the dictionary form. Drop the -is, and what is left is the stem.

- **sīdus, sīder-is.** **sīder-** is the stem, to which the endings are added.
- **āēr, āer-is.** **āer-** is the stem to which the endings are added.
- **nōmen, nōmin-is.** **nōmin-** is the stem.

📍 **Practicum: Stems** 📍 Give the stem of the following third declension nouns.

ex. tempus, temporis tempor-

1. nox, noctis _____

2. orbis, orbis _____

3. homo, hominis _____

4. ignis, ignis _____

5. lux, lūcis _____

The nominative singular form does not have a regular ending, it has its own idiosyncratic form. Do not try to add endings to a nominative singular word, it doesn't work.

- **sīdus** (ends in **-us**)
- **nōmen** (ends in **-en**)
- **āēr** (ends in **-er**)

Though nominative singular forms are idiosyncratic, all other cases have perfectly regular endings! (See the paradigm below).

Masculine and feminine endings are the same. Neuters have their own nominative and accusative endings, but are the same as m/f in other cases, just as in the second declension.

Third declension noun paradigm:

case	Singular		Plural	
	masc./fem.	neuter	masc./fem.	neuter
nom.	söl (varies)*	sīdus (varies)	söl -ēs	sīder-a
acc.	söl-em	sīdus (varies)	söl -ēs	sīder-a
gen.	söl-is	sīder-is	söl -um	sīder-um
dat.	söl-ī	sīder-ī	söl -ibus	sīder-ibus
abl.	söl-e	sīder-e	söl -ibus	sīder-ibus

The same paradigm, showing the endings by themselves:

case	Singular		Plural	
	masc./fem.	neuter	masc./fem.	neuter
nom.	(varies)	(varies)	-ēs	-a
acc.	-em	(varies)	-ēs	-a
gen.	-is	↯	-um	↯
dat.	-ī	↯	-ibus	↯
abl.	-e	↯	-ibus	↯

📍 **Practicum: Case formation 1** 📍 Study the paradigms, then working from memory if you can, fill out the paradigms below with the forms of the words requested. Step one: find the stem of the noun. Step two: is the word neuter or not? Step three: Put the nominative singular ending in its place, then for the other forms, add the endings to the stem, using the neuter variations (nominative and accusative) if the word is neuter.

* each nominative singular noun will have its own form – no general rule.

1. lux, lūcis, f

	Singular	Plural
nom.		
acc.		
gen.		
dat.		
abl.		

2. nōmen, nōminis, n

	Singular	Plural
nom.		
acc.		
gen.		
dat.		
abl.		

3. sōl, sōlis m

	Singular	Plural
nom.		
acc.		
gen.		
dat.		
abl.		

4. homo, hominis, m & f

	Singular	Plural
nom.		
acc.		
gen.		
dat.		
abl.		

5. corpus, corporis, n

	Singular	Plural
nom.		
acc.		
gen.		
dat.		
abl.		

🕒 **Practicum: Case formation 2** 🕒 Give the accusative form of these nominative words, keeping singulars singular and plurals plural. (All words are third declension, but singulars and plurals are mixed together in this exercise!) Step one: find the stem. Step two: add the singular or plural accusative ending. (Note: If you have not yet started learning the dictionary form of these nouns, now would be a good time; you need to know the stem to complete this exercise.)

<i>nominative</i>	<i>accusative</i>
homo	
ignis	
sidus	
hominēs	
sidera	

Give the ablative form of these nominative words, keeping singulars singular and plurals plural. Step one: find the stem. Step two: add the singular or plural ablative ending.

<i>nominative</i>	<i>ablative</i>
lux	
nox	
tempus	
tempora	
lūcēs	

Give the genitive form of these nominative words, keeping singulars singular and plurals plural. Step one: find the stem. Step two: add the singular or plural genitive ending.

<i>nominative</i>	<i>ablative</i>
aetas	
ignis	
tempora	
aetatēs	
lūcēs	

Give the nominative form of these accusative or ablative words, keeping singulars singular and plurals plural. Step one: determine whether the word is singular or plural. Step two: if singular, just put in the nominative form. If plural, add the plural nom. ending to the stem.

<i>abl./acc.</i>	<i>nominative</i>
homine	
aerem	
tempus	
hominibus	
temporibus	

Practicum: Gender, number and case Referring to the paradigms if you need to, circle the correct gender, number and case for these third-declension words. Note: Since there is no sentence to show you the actual use of the noun, you should circle more than one case if there is more than one possibility.

Word	Gender	Number	Case
ignibus	<i>m f n</i>	<i>s pl</i>	<i>nom. acc. gen. dat. abl.</i>
tempore	<i>m f n</i>	<i>s pl</i>	<i>nom. acc. gen. dat. abl.</i>
lux	<i>m f n</i>	<i>s pl</i>	<i>nom. acc. gen. dat. abl.</i>
hominës	<i>m f n</i>	<i>s pl</i>	<i>nom. acc. gen. dat. abl.</i>
sölem	<i>m f n</i>	<i>s pl</i>	<i>nom. acc. gen. dat. abl.</i>
orbis	<i>m f n</i>	<i>s pl</i>	<i>nom. acc. gen. dat. abl.</i>
hominum	<i>m f n</i>	<i>s pl</i>	<i>nom. acc. gen. dat. abl.</i>
sideri	<i>m f n</i>	<i>s pl</i>	<i>nom. acc. gen. dat. abl.</i>

Practicum: Translation Translate the following sentences. Watch nominatives & accusatives!

- sidera in orbe pendent. _____
- sidera in orbe mundi pendent. _____
- ignis et äer in caelö sunt. _____
- orbis terrarum per caelum nön volvit -- _____
- caelum tamen circum orbem terrarum volvit. _____

6. stellae ē caelō nōn cadunt. _____

7. sōl est magnus et hominēs semper videt. _____

I-stems

An i-stem is a third declension noun whose genitive plural is *-ium* instead of *-um*.

Neuter i-stems also have nom./acc. plural endings *-ia* instead of *-a*, and ablative

singular endings as *-ī* instead of *-e*. You will probably not even notice these variations as you are reading, but you need to know them to write forms correctly.

I-stems are noted in the chapter vocabulary. (It is possible to identify i-stems from their dictionary forms, but unfortunately, the rules are pretty complex. If you want to be able to figure this out for yourself, go to the appendix of this chapter, and the extra credit practicum.)

Paradigm: This is the paradigm of third declension endings from p. 87, but with i-stem variations in brackets. You can see that i-stem endings are the same as other third declension words in most cases.

case	Singular		Plural	
	masc./fem.	neuter	masc./fem.	neuter
nom.	(varies)	(varies)	-ēs	-a [-ia]
acc.	-em	(varies)	-ēs	-a [-ia]
gen.	-is	↯	-um [-ium]	↯
dat.	-ī	↯	-ibus	↯
abl.	-e	↯ [ī]	-ibus	↯

© Practicum: I-stem forms © Give the forms of **animal**, **animālis n.**

case	Singular	Plural
nom.		
acc.		
gen.		
dat.		
abl.		

III. Third Declension Adjectives

We have already seen first-and-second declension adjectives, which have a three-part dictionary form which shows their masculine, feminine and neuter nominative forms.

There are also third declension adjectives. Since in the third declension, masculine and feminine forms are the same, **the third declension adjective's dictionary form has only two parts, one for masculine-and-feminine nominative, one for neuter nominative***:

- **omnis, omne**, *all*. **omnis** is the masculine-and-feminine nominative form, **omne** is the neuter nominative form.
- **brevis, breve**, *brief*. **brevis** is the masculine-and-feminine nominative form, **breve** is the neuter nominative form.
- **fortis, forte**, *brave/strong*. **fortis** is the masculine-and-feminine nominative form, **forte** is the neuter nominative form.

As with third declension nouns, you find the stem by dropping the –is, though this time the –is is in the first position of the dictionary form.

- **omn-is**: the stem is **omn-**
- **brev-is**: the stem is **brev-**

Third declension adjective forms are almost exactly like the noun forms, with two exceptions: (1) they are –i-stems, and (2) they have an –i instead of an –e in the ablative case.

Third declension adjective paradigm

case	Singular		Plural	
	masc./fem.	neuter	masc./fem.	neuter
nom.	omnis	omn-e	omn-ēs	omn-ia
acc.	omn-em	omn-e	omn-ēs	omn-ia
gen.	omn-is	↯	omn-ium	↯
dat.	omn-ī	↯	omn-ibus	↯
abl.	omn-ī	↯	omn-ibus	↯

The same paradigm, showing the endings by themselves, with asterisks by the differences from nouns:

case	Singular		Plural	
	masc./fem.	neuter	masc./fem.	neuter
nom.	-is	-e	-ēs	-ia*
acc.	-em	-e	-ēs	-ia*
gen.	-is	↯	-ium*	↯*
dat.	-ī	↯	-ibus	↯
abl.	-ī*	↯*	-ibus	↯

* There are other types of third declension adjectives with slightly different forms, which we will encounter later.

Note: Not all third declension adjectives have the **-is, -e** pattern (as in **omnis, omne**), but this is the most common form.

Reality check: If the variations in the third declension are beginning to boggle your mind, don't be too alarmed. These are fine points. If you want to keep writing Latin correctly, and if you want to be completely sure of your endings, then study the variations in detail. If you are more concerned to develop your basic reading skills and ability to work with and understand the language, focus on learning the noun forms and return to this as a "finishing touch."

🕒 **Practicum: Adjective forms** 🕒 Following the examples of the paradigm, give the forms of the adjective **brevis, breve** *brief*:

Singular

Case	<i>masculine and feminine</i>	<i>neuter</i>
<i>nom.</i>		
<i>acc.</i>		
<i>gen.</i>		
<i>dat.</i>		
<i>abl.</i>		

Plural

Case	<i>masculine and feminine</i>	<i>neuter</i>
<i>nom.</i>		
<i>acc.</i>		
<i>gen.</i>		
<i>dat.</i>		
<i>abl.</i>		

IV. Adjective Agreement

As we have seen, adjectives agree with the noun they describe in gender, number and case. When we were dealing only with first and second declension nouns and adjectives, agreement almost always meant that the endings were the same, such as **puellae pulchrae** or **capri magni**. Only in a few cases, such as **ager magnus**, would endings be different. Now that the third declension is involved, though, adjectives can still agree while their endings are different. Some examples:

- **magnus orbis**, *a large circle*. both are m., s., nom., but since they are from different declensions, their endings are different.
- **sideribus calidis**, *hot stars*. Both are n., pl., abl., but because they are different declensions, their endings are different.

Note: Remember that there are three types of noun so far:

- first declension (**terra, -ae f**)
- second declension (**ventus, -ī m** and **astrum, astrī n**)
- third declension (**söl, sölis m**)

There are only two types of adjectives:

- first-and-second-declension (**medius, -a, -um**)
- third declension (**brevis, -e**)

Nouns and their adjectives agree in gender, number and case, but each word has the endings of its own declension.

- **omnēs stellae**, *all the stars* Both are feminine, plural, nominative. **omnēs** has the third declension ending because it is a third declension adjective, while **stellae** has the first declension ending, because it is a first declension noun.
- **noctibus longīs**, *long nights* Both are feminine, plural, ablative. **noctibus** has the third declension ending because it is a third declension noun, while **longīs** has the first declension ending, because it is a first-and-second-declension adjective.
- **multös hominēs**, *many people* Both are masculine, plural, accusative. **multös** has the second declension ending, because it is a first-and-second-declension adjective describing a masculine word, and **hominēs** has the third declension ending because it is a third declension noun.

Paradigms for comparison: Appendix 1 gives a comparative paradigm of first, second and third declension words. You can use this chart to help you with adjective agreement. If you do the practicum while looking at the chart, see if you can reproduce your results later from memory.

📌 **Practicum: Adjective Agreement 1** 📌 Fill out the paradigm with the correct forms of this noun-adjective pair: **ventus fortis**, *a strong wind*. **ventus, -ī m** is second declension, so will have those endings, and **fortis, forte** is third declension, so it will have the third declension adjective forms. If you need to, consult the noun and adjective paradigms, so you can see how each word goes through the different cases.

case	Singular	Plural
nom.	ventus fortis	
acc.		
gen.		
dat.		
abl.		

📌 **Extra practice Practicum: Adjective agreement** 📌 **On your own paper, not to turn in, write out the paradigms of:**

- **sīdus calidum**, a hot star (3rd decl. noun, 1st -&-2nd decl. adjective)
- **nox frigida**, a cold night (3rd decl. noun, 1st -&-2nd decl. adjective)
- **fēmina gravis**, a serious woman (1st decl. noun, 3rd decl. adjective)
- **liber levis**, a light book (2nd decl. noun, 3rd decl. adjective)

📌 **Practicum: Adjective agreement 2** 📌 This exercise has two parts: (a) circle the correct gender, number and case of the underlined word, and (b) make the adjective in parentheses the same gender, number and case and put it in the sentence. You have the dictionary form, not the only choices, in parentheses! Consult the paradigms if you are not sure about the endings. And be ready to read these sentences in class.

ex. omnēs hominēs in magnum orbem habitant. (magnus, -a, -um)

(a) orbem: // m f n // s pl // nom. acc. abl. gen. dat. //

1. manēmus per _____ noctem. (longus, -a, -um).

(a) noctem: // m f n // s pl // nom. acc. abl. gen. dat. //

2. venti _____ inter casās festinant. (frigidus, -a, -um)

(a) ventī: // m f n // s pl // nom. acc. abl. gen. dat. //

3. _____ stellās vidēmus. (proximus, -a, -um)

(a) stellās: // m f n // s pl // nom. acc. abl. gen. dat. //

4. circum ignem _____ sedent. (calidus, -a, -um)

(a) ignem: // m f n // s pl // nom. acc. abl. gen. dat. //

5. _____ puellae ad forum celeriter currunt. (omnis, omne)

(a) puellae: // m f n // s pl // nom. acc. abl. gen. dat. //

6. Titus Lucretius Carus est nōmen _____. (longus, -a, -um)

(a) nōmen: // m f n // s pl // nom. acc. abl. gen. dat. //

V. Reading Notes

(1) omnis, omne

- **omnis, omne** generally means means *all* or *every*.
 - **omnis puella** – *all girl* sounds odd, but *every girl* works
 - **omnēs hominēs** – *every person* sounds fine, *all people* keeps the plural and is even better.
- **omnia**, neuter plural, can be used by itself to mean *all things* or *everything*: **puella omnia dicit**, *the girl told everything*. (**omnia** is also often used with nouns, like any adjective: **omnia sīdera**, *all the stars*.)

- **omnēs**, masculine/feminine plural, can also be used without an adjective to mean *everyone*: **omnēs ad agrum currunt**, *everyone is running to the field*. (Note that English *everyone* is singular though it refers to more than one person – Latin **omnēs** is much more logical!)
- Both words can be in other cases too: **ille philosophus est magister omnium**, (genitive), *that philosopher is everybody's teacher*.

(2) Substantives (Adjectives used as nouns)

Other adjectives can be used by themselves, as nouns, as **omnia** and **omnēs** are used. For example:

- **multī sidera vident**, *many (people) see the stars*. **multī** is m., pl. By itself it means *many*, but since there is no noun for it to go with, you can assume it means *many men/people*.
- **multa dicit**, *he says a lot*. **multa** is n. pl. By itself it means *many*, but without a noun, since it is neuter, you can assume it means *many things*.
- **beatī cum amicīs bonīs colloquium faciunt**, *fortunate (men/people) converse with good friends*.
- **beatae cum virīs bonīs habitant**, *fortunate (women) live with good men*.

(3) medius, -a, -um Latin and English have different ways of describing things *in the middle*.

- English uses *of*:
 - *in the middle of the field*
- Latin just uses **medius, -a, -um** as an adjective:
 - **in mediō agrō stat**, *he stands in the middle (of) the field* (ablative because of **in**)
 - **cervus per mediam silvam currit**, *the deer runs through the middle (of) the forest* (accusative because of **per**)
- A survival of this in English usage is the term **in mediās rēs**, *in the middle of things, in the middle of an ongoing issue*: e.g., "He jumped into the discussion *in mediās rēs*."

(4) nihil means *nothing*. Its forms do not change, whatever case it is in.

- **nihil scīmus de mundō**, *we know nothing about the universe*. *We* is the subject, so **nihil** is accusative, but it keeps the same form.
- **nihil ē mundō fugit**, *nothing escapes from the universe*. **nihil** is the subject, so it is nominative, but it still has the same form.

(5) alius . . . alius can be used in English to mean *some . . . others*.

- **aliī in silvīs vivunt, aliī in agrīs**. *Some live in the forests, others in the fields*.

(6) Compound verbs review Prefixes can be added to verbs to alter their meaning in more or less predictable ways. We have seen:

- **ab + eō (abeō)**, *go away*; **abit**, *s/he goes away*

- **ex + eō (exeō)**, go out; **exit**, s/he goes out

We may also see:

- **ē + fugiō (ēfugiō)**, run out, escape
- **ē + mittō (ēmittō)**, send out
- **ē + dūcō (ēdūcō)**, lead out
- and so on . . .

VI. Reading and Analysis: Mundus

mundus est orbis magnus. omnia sunt in mundō; nihil ē mundō ēfugit, nihil in mundum venit. in mundō sunt multa astra. lux astrōrum est parva, quod astra procul terrā* sunt. quoque sunt septem sidera magna fortiaque: hominēs illa appellant sidera Saturni, Iovis, Martis, Veneris, et Mercurii; solem, et lunam. sidus Saturni est magnum et frigidum; procul terrā volvitur per caelum. sidus Martis prope solem volvitur; illud sidus calidum per caelum festinat. luna est sidus proximum terrae*. omnia sidera circum terram volvunt. alia celeriter volvunt, alia lentē.

in mediō mundō terra pendet, magna pulchraque. hominēs in terrā vivunt; ibi animalia per silvas errant; ibi hominēs agrōs colunt. interdiū* calidam lucem solis vident; illa lux hominēs cūrat et vitam bonam eis* dat. ubi sol ab hominibus abit, nox est. nocte* hominēs aliās stellās vidēre possunt*. illae stellae lucent, sed lux eōrum est parva. luna est proxima stellarum, magistra omnium quae* hominēs de sideribus sciunt.

per spiritum, inter terram caelumque, movent septem sidera errantia. inter ea est sol, temporum* terraeque, siderum caelique rector*. sol lucem omnibus* dat; lux eius tenebras* oppugnat. sol tempora annumque regnat*, sol quoque animos* humanos serenat*, sol lucem aliis sideribus* dat. sol, fortissimus* et optimus, omnia videt, omnia audit.

*procul terrā: far from earth (the ablative has a from meaning here)
 *nocte: at night
 *vidēre possunt: they can see.
 *proximum terrae: closest to earth.
 *interdiū: by day
 *eis to them
 *vidēre possunt: they are able to see
 *quae: that (refers to omnium, all that . . .)
 *temporum . . . this and the next 3 words are genitives with rector.
 *rector, -oris m: ruler
 *omnibus: dative, to all
 *tenebra, -ae f: shadow
 *regno, -are: rule
 *aliis sideribus; dative, to all the stars
 *animus, i m: spirit, soul
 *serenō (1): soothe
 *fortissimus: strongest

📍 **Practicum: Reading analysis** 📍 Identify the gender, number and case of the underlined nouns or adjectives. Remember that the gender, number and case of an adjective are the same as those of the noun it agrees with. Note: in this exercise, choose one case based on the use in the sentence. (This is the first paragraph of the reading.)

mundus est orbis magnus. omnia sunt in mundō; nihil ē mundō ēfugit, nihil in mundum venit. in mundō sunt multa astra. lux astrōrum est parva, quod astra procul terrā sunt. quoque sunt septem sidera magna fortiaque: hominēs illa appellant sidera Saturni, Iovis, Martis, Veneris, et Mercurii; solem, et lunam. sidus

Saturni est magnum et frigidum; procul terrā volvit per caelum. sidus Martis prope solem volvit; illud sidus calidum per caelum festinat.

Word	Gender	Number	Case				
orbis	<i>m f n</i>	<i>s pl</i>	<i>nom.</i>	<i>acc.</i>	<i>gen.</i>	<i>dat.</i>	<i>abl.</i>
omnia	<i>m f n</i>	<i>s pl</i>	<i>nom.</i>	<i>acc.</i>	<i>gen.</i>	<i>dat.</i>	<i>abl.</i>
mundö	<i>m f n</i>	<i>s pl</i>	<i>nom.</i>	<i>acc.</i>	<i>gen.</i>	<i>dat.</i>	<i>abl.</i>
lux	<i>m f n</i>	<i>s pl</i>	<i>nom.</i>	<i>acc.</i>	<i>gen.</i>	<i>dat.</i>	<i>abl.</i>
aströrum	<i>m f n</i>	<i>s pl</i>	<i>nom.</i>	<i>acc.</i>	<i>gen.</i>	<i>dat.</i>	<i>abl.</i>
hominēs	<i>m f n</i>	<i>s pl</i>	<i>nom.</i>	<i>acc.</i>	<i>gen.</i>	<i>dat.</i>	<i>abl.</i>
sölem	<i>m f n</i>	<i>s pl</i>	<i>nom.</i>	<i>acc.</i>	<i>gen.</i>	<i>dat.</i>	<i>abl.</i>
calidum	<i>m f n</i>	<i>s pl</i>	<i>nom.</i>	<i>acc.</i>	<i>gen.</i>	<i>dat.</i>	<i>abl.</i>

📍 **Practicum: Translation** 📍 Translate the second paragraph:

in mediö mundö terra pendet, magna pulchraque. hominēs in terrā vivunt; ibi animälia per silväs errant; ibi hominēs agrös colunt. interdiü* calidam lucem sölis vident; illa lux hominēs cürat et vitam bonam eis* dat. ubi söl ab hominibus abit, nox est. nocte* hominēs aliäs stelläs videre possunt*. illae stellae lucent, sed lux eörum est parva. luna est proxima stellärum, magistra omnium quae* hominēs de sideribus sciunt.

📍 **Practicum: Word groupings** 📍 (a) Underline the verbs, (b) draw-a-connecting-line-between-nouns-and-adjectives, (c) (put parentheses around prepositional phrases (including their adjectives)), and (d) put a double slash // between clauses.

1. sidus Martis prope sölem volvit; illud sidus calidum per caelum festinat.
2. in mediö mundö terra pendet, magna pulchraque.
3. illae stellae lucent, sed lux eörum est parva.
4. per spirütum, inter terram caelumque, movent septem sidera errantia.

VII. Numbers

Cardinal numbers tell you how many of something there are (one, two three . . .)

- **sex elephantū in harēnā hodiē pugnant**, six elephants are fighting in the arena today.
- **sunt duodecim mensēs in annō**, there are twelve months in a year.

Ordinal numbers tell you in what order things are (first, second, third . . .). They can be used to describe, “which one . . .?”

- **sextus elephantus per harēnam currit**, the sixth elephant is running through the arena.
- **duodecimus mensis est December**, the twelfth month is December.

Chart: These are the cardinal numbers from one to twelve, and the ordinal numbers from first to twelfth. Study them by counting out loud.

Cardinal Numbers (How many?)		Ordinal Numbers (In what order?)	
one	ūnus, -a, -um	prīmus, -a, -um	first
two	duo, duae, duo	secundus, -a, -um	second
three	trēs, tria	tertius, -a, -um	third
four	quattuor	quārtus, -a, -um	fourth
five	quīnque	quīntus, -a, -um	fifth
six	sex	sextus, -a, -um	sixth
seven	septem	septimus, -a, -um	seventh
eight	octō	octāvus, -a, -um	eighth
nine	novem	nōnus, -a, -um	ninth
ten	decem	decimus, -a, -um	tenth
eleven	ūndecim	undecimus, -a, -um	eleventh
twelve	duodecim	duodecimus, -a, -um	twelfth

Cardinal numbers come in front of the word they describe; ordinals go either way.

- **quattuor elementa**, four elements
- **secundus annus** or **annus secundus**, the second year

Latin ordinal numbers are first-and-second declension adjectives. They agree with the noun they modify.

- **prīmum elementum est ignis**, the first element is fire. **elementum** is n., s., nom., so **prīmus, -a, -um** becomes **prīmum** to agree.
- **septima puella est amica Gaii**, the seventh girl is Gaius' girlfriend. **puella** is f., s., nom., so **septimus, -a, -um** becomes **septima** to agree.
- **ursus tertium bestiārium oppugnat**, the bear is attacking the third animal fighter. **bestiārium** is m., sing., acc.; **tertius, -a, -um** becomes **tertium** to agree.

📌 **Practicum: Adjective agreement/ordinal numbers** 📌 Make the ordinal number agree with the underlined word. (Step one: what is the gender, number and case of the underlined word? Step two: give the ordinal number the first-and-second declension ending to agree.)

1. _____ fēmina in flumine cadit. (secundus, -a, -um)
2. _____ elephantus illās casās destruit. (quintus, -a, -um)
3. scimus _____ philosophum. (septimus, -a, -um)
4. _____ animal videmus. (quārtus, -a, -um)
5. nōmen _____ virō legō. (decimus, -a, -um)

Most Latin cardinal numbers are indeclinable: they don't change their endings to agree with nouns.

- **septem sīdera**, *seven stars*. **sīdera** is n., pl., nom.; **septem** does not change.
- **cum septem puellis**, *with seven girls*. **puellis** is f., pl, abl.; **septem** does not change.
- **quinque equōs**, *five horses*. **equōs** is m., pl., acc.; **quinque** does not change.

📍 **Practicum: Cardinal Numbers 4-12** 📍 Replace the Roman numerals with the written number.

1. sunt _____ (V) olivae in mensā.
2. philosophus _____ (VII) argumenta habet.
3. _____ (VI) bestiae inter casās manent.
4. _____ (IV) ventī per terram movent.
5. _____ (XII) philosophī in scholā sedent.

ūnus, -a, -um, duo, duae, duo, and trēs, tria, change to agree with their noun.

Unfortunately their forms are complex. Unless you have a computer memory, don't fry your brain by trying to memorize them all, just be prepared to recognize these words in reading.

unus, -a, -um has only singular forms (since it means "one").

- most of its forms are like ordinary first-and-second declension adjectives.
 - **unus elephantus**, *one elephant*. m., s., nom.
 - **unam casam**, *one house*. f., sing., acc.
- but its genitive and dative singular forms are like **is, ea, id** and **ille, illa, illud**: **unīus** (genitive, like **illius** and **eius**) and **unī** (dative, like **illī** and **eī**).
 - **lux unīus sideris**, *the light of one star*; n., s., gen.
 - **omnia dicit unī amicō**, *s/he told all to one friend*; m., s., dat.

duo, duae, duo has only plural forms. Its forms are usually like a first-and-second declension adjective, but watch for:

- **duo** for masculine and neuter nominative (and neuter accusative):

- **duo puerī**, *two boys* (m., pl, nom.)
- **duo argumenta**, *two proofs* (n., pl., nom. or acc.)
- **duōbus** (m. & n.) and **duābus** (f.) for dative and ablative
 - **ē duābus ianuīs**, *out of two doors*
 - **cum duōbus amicīs**, *with two friends*

trēs, tria has only plural forms. It is a regular third declension adjective. Its stem is tr-. (Examples are with third declension nouns so you can observe that they share the same third declension endings.)

- **trēs nautēs**, *three ships*
- **in tribus fluminibus**, *in three rivers*
- **tria animālia**, *three animals*

🕒 **Practicum: Which case?** 🕒 Circle the right case for the underlined form of I, II or III.

1. argumentum unius philosophi est optimum. *nom. acc. gen. dat. abl.*
2. agricola cum duōbus animalibus ad forum festinat. *nom. acc. gen. dat. abl.*
3. ille homo tria animālia invenit. *nom. acc. gen. dat. abl.*
4. venti fortēs duās casās destruunt. *nom. acc. gen. dat. abl.*

VIII. Reading Notes and Reading: Annus Agricolae

(1) **est/sunt** When used at the beginning of a clause, **sunt** translates well as *there are*, **est** as *there is*.

- **sunt multae stellae in caelō**, *there are many stars in the sky*.
- **est philosophus qui omnia explicat**, *there is a philosopher who explains everything*.

(2) **nomen** In English, when you give someone's name, you use the genitive:

- *His name is Michael.* (*His* is genitive.)

In Latin, you use the dative case.

- **nōmen puerō est Marcus**, *the name of the boy is Marcus.* (Literally, *the name to the boy is Marcus.*)
- **sunt duo magna sidera; nōmina eīs sunt sōl et luna.** *There are two great stars; their names are the sun and the moon.*

(3) **Time: ablative case to show when.** The ablative case can be used by itself, with no preposition, to show when something happens/happened.

- **primā luce ad agrōs ambulat**, *They walk to the fields at first light (i.e., at dawn).*
- **illō tempore hominēs minima sciēbant dē rerum nātūrā**, *At that time people knew very little about nature.* (**sciēbant** is a past tense; see ch. 5.)

- **mense Februariō agricolae vineās cūrant**, *In the month of February, farmers take care of their vines.*

Mensēs Anni

Farmers had to be particularly attuned to the changing of the seasons, and this meant knowing the constellations as well as all the other seasonal clues of the natural world. The earliest ancient farming guides use an astronomical timetable to suggest when to plant, sow, and perform all of the other



necessities of farm life.



The Romans worked from a twelve-month calendar much like ours – in fact our system of reckoning time has not changed much since Julius Caesar reformed the Roman calendar in 54 BCE. Even the names of the Roman months are easy to see in our own month names – some are even identical. (The Roman week, on the other

hand, had eight days.)

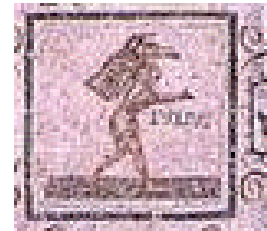
Your reading passage is partly adapted from an ancient calendar of farm activities (and the illustrations above are from a mosaic showing farm activities month by month).

sunt duodecim mensēs in annō. mensis primus est Iānuārius. mensis secundus est Februārius. mensis tertius est Martius. nōmen mensī quārtō est Aprīlis, mensī quīntō est Māius, mensī sextō est Iūnius. nōmina aliīs mensibus sunt Iūlius, Augustus, September, Octōber, November, et December.

Annus Agricolārum:

quid faciunt agricolae in omnibus mensibus anni?

primō mense, domī labōrant, dum instrumenta* parant.
 secundō mense, vineās* cūrant.
 tertiō mense, frūmentum serunt.*
 quartō mense, ovēs* caprōsque cūrant.
 quīntō mense, frūmentum cūrant et lanam* colligunt.
 sextō mense, vineās cūrant.
 septimō mense est messis* frūmentaria.*
 octāvō mense quoque est messis frūmentaria.
 nonō mense, agricolae pōma colligunt.
 decimō mense, uvās* colligunt, vinum faciunt, et fimum* ad agrōs portant.
 undecimō mense, frūmentum serunt.
 duodecimō mense, olivās colligunt et fimum ad vineās portant.



agricola frūmentum serit

instrumentum, -ī *n*:
tool
 vinea, -ae *f*: *vines (i.e. grape vines)*
 serō, -ere: *sow (i.e. plant seeds)*
 ovis, ovis *m & f*: *sheep*
 lana, -ae *f*: *wool*
 messis, messis *f*:
harvest
 frūmentarius, -a, -um:
grain (as an adjective)
 uva, -ae *f*: *a bunch of grapes*
 fimum, -ī *n*: *manure*

🌐 **Practicum: Months** 🌐 Describe what farmers do in the months of the year:

January _____

February _____

March _____

April _____

May _____

June _____

July _____

August _____

September _____

October _____

November _____

December _____

IX. Superlative adjectives

In English superlative adjectives are usually expressed with -est or most ---:

- he is the most beautiful child I have ever seen
- earth is the heaviest element

Superlatives in Latin are made by adding the suffix **-issimus, -a, -um** to the stem of an adjective.

- **grav-issimus**, *the heaviest*. The stem of **gravis, grave** is **grav-**, and the superlative ending is attached to that.
- **long-issimus**, *the longest*. The stem of **longus, -a, -um** is **long-**, and the superlative ending is attached to that.

Some superlatives are irregular – though often they have good cognates in English and are not too hard to remember.

Adjective	Superlative
bonus, -a, -um , <i>good</i>	optimus, -a, -um , <i>best</i>
malus, -a, -um , <i>bad</i>	pessimus, -a, -um , <i>worst</i>
magnus, -a, -um , <i>big</i>	maximus, -a, -um , <i>biggest</i>
parvus, -a, -um , <i>small</i>	minimus, -a, -um , <i>smallest</i>

📍 **Practicum: Forming Superlatives (1)** 📍 Give the superlative form of each adjective, and its English meaning. (Step one: find the stem of the adjective. Step two: add the superlative ending. Watch for the two irregular superlatives.)

Adjective	Superlative	English meaning
1. placidus, -a, -um		
2. saevus, -a, -um		
3. longus, -a, -um		
4. brevis, breve		
5. gravis, grave		
6. bonus, -a, -um		
7. parvus, -a, -um		

Superlatives are first-and-second declension adjectives; their endings change to agree with the noun they modify.

- **puellam beatissimam**, *the happiest/most blessed girl*. Both are f., s., acc.
- **flüminibus frigidissimis**, *the coldest rivers*. Both are n., pl., abl.
- **argumentum fortissimum**, *the strongest argument*. Both are n., s., nom. or acc.

📍 **Practicum: Forming Superlatives (2)** 📍 Give the superlative form of each adjective, keeping it consistent in gender, number and case. (Step one: find the stem of the adjective. Step two: add the superlative ending. Step three: make sure it is the same gender, number and case as the original adjective.)

Adjective	Superlative	English meaning
ex. territäs (f., pl., acc.)	terrütissimäs	very/most terrified
1. paucös (m., pl., acc.)		
2. calidi (m., s., gen.)		
3. frigidörum (m., pl., gen.)		
4. grave (n., s., acc.)		
5. forti (f., s., dat.)		

6. malās (f. pl. acc.)		
7. magni (m., pl., nom.)		

Superlatives are often used with genitives.

- **ignis est levissimum elementorum**, *fire is the lightest of the elements.*
- **calidissima omnium stellarum est sol**, *the hottest of all the stars is the sun.*

Superlatives can mean very --- or extremely ---, as well as the most ---.

- **ille ursus est saevissimus**, *that bear is extremely savage.*
- **in casā calidissimā habitāmus**, *we live in a very hot house.*

@Practicum: Superlatives in Context@ For each sentence, (a) circle the superlative, (b) if it goes with a genitive, underline the genitive, and (c) translate the sentence, choosing a meaning (i.e. “most ___” or “very ___”) that fits the context.

1. illud argumentum est pessimum. _____
2. amicus meus est optimus hominum. _____

3. per noctem longissimam in casam manēmus. _____

4. bestiae in harēnam festinant cum pessimis scelestorum. _____

5. hodiē legō brevissimum librum. _____

@Practicum: Using Superlatives in Sentences@ For each sentence, put the correct form of the superlative in the blank to agree with the underlined word. (Step one: check the dictionary form of the adjective given to find the stem. Step two: add the superlative ending—or switch to the irregular superlative. Step three: make it agree with the underlined word in gender, number and case.)

1. elephanti sunt _____ animalium. (fortis, forte)
2. quid est elementum _____? (levis, leve)
3. Februarius est mensis _____. (brevis, breve)
4. primordia _____ per mundum fluunt. (parvus, -a, -um)

X. The Relative Pronoun

The relative pronoun means who or which.

- **primordia faciunt omnia quae per mundum movent**, *atoms make up everything which moves through the world.*
- **Democritus est philosophus qui primordia invenit**, *Democritus is the philosopher who discovered atoms.*

The relative pronoun has masculine, feminine, and neuter, singular and plural forms in all the cases (a full paradigm). But for now, we are only going to use the nominative forms:

	masculine	feminine	neuter
singular	qui	quae	quod
plural	qui	quae	quae

The relative pronoun always appears in a clause (a relative clause), and relates this clause to the rest of the sentence.

- **legimus libros philosophorum // qui de rerum natura scribunt**, *we read the books of philosophers // who write about nature.* The relative clause is **qui de rerum natura scribunt**, and **qui** connects the clause to the other.

In a sentence, the relative pronoun has an antecedent, a word it replaces in its clause. It agrees with its antecedent in gender and number.

- **Democritus, qui primordia invenit, est maximus philosophorum.** *Democritus, who discovered atoms, is the greatest of philosophers.* **Democritus** is the antecedent, and **qui** refers to Democritus. Both are masculine (gender) and singular (number).
- **agricola frumentum curat quod in agro maturat.** *The farmer tends the grain which is maturing in the field.* **frumentum** is the antecedent, and **quod** stands for it in the sentence's second clause. Both are neuter (gender) and singular (number).

The relative pronoun does not need to be the same case as its antecedent. Each has the appropriate case for its own clause.

- **legimus libros philosophorum // qui de rerum natura dicunt**, *we read the books of philosophers // who speak about nature.* **qui** and **philosophorum** are both masculine and plural. But in its clause, **philosophorum** is genitive for an "of" meaning, while **qui** is nominative, as the subject: *who write . . .*
- **de luna dico, // quae per noctem lucet.** *I speak of the moon, // which shines through the night.* **luna** and **quae** are both f. and s., but **luna** is ablative (with **de**), while **quae** is nominative because it is the subject of its clause.

Often the relative clause appears in the middle of a sentence (as it does in English).

- **ignis, qui materia stellārum est, per mundum fluit.** *Fire, which is the material of the stars, flows through the universe.* The relative clause, **qui materiam stellārum est**, is in the middle of the main clause, **ignis . . . per mundum fluit.**
- **puer qui in flūmen cadit est frigidus.** *A boy who falls in the river is cold.* The relative clause, **qui in flūmen cadit**, is in the middle of the main clause, **puer . . . est frigidus.**

Reading note: **quod**, the neuter singular relative pronoun meaning *which*, is spelled the same as the adverb **quod**, meaning *because*. How can you read them accurately?

- First, always read with flexibility for meaning: don't learn that **quid** means only *which* or only *because*.
- *Because* is the more common meaning; while staying flexible, that should be your "default setting."
- When you encounter **quod** at the beginning of a clause, check to see if the sentence's other clause has a neuter word that **quod** might stand for.
- **pōmum quod in manū teneo est optimum.** *The fruit which I hold in my hand is very good.* **quod** follows a neuter word, and *which* works well in the context.
- **puer in flūmen cecidit quod caper eum oppugnat.** *The boy fell into the river because the goat attacked him.* **flumen** is neuter, so **quod** could possibly go with it. But *because* makes more sense, and besides, the second clause has its own subject (the goat).

📍 **Practicum: Relative Clauses and Antecedents** 📍 For each sentence, (a) put parentheses around the relative clause, (b) underline the relative pronoun and antecedent, and (c) translate the sentence.

1. lunam, quae per noctem lūcet, nunc vidēmus. _____

_____.

2. "luna" est nomen stellae quae proxima terrae volvit. _____

_____.

3. viri fēminaeque elephantōs vident qui in harēnā pugnant. _____

_____.

4. philosophi primordia quaerunt quae sunt materia omnium. _____

_____.

5. animal invenimus quod in silvā habitat. _____

_____.

Ⓢ **Practicum: Relative Clauses** Ⓢ Put the correct form of the relative pronoun in the blank. Step one: What is the gender and number of the underlined antecedent? Step two: put in the blank the form of the relative pronoun that has the same gender and number. (Be ready to translate in class.)

1. sōl, _____ magnopere lūcet, est sidus maximum.
2. stellae, _____ per caelum lente movent, sunt pulchrae.
3. philosophi quattuor elementa sciunt _____ in omnibus sunt.
4. vincula ursum tenent _____ nunc sub harēnā manet.
5. sumus amici puellae _____ in illa casā habitat.

XI. The elements

The Latin word from which our word science descended, is **scientia, -ae f**, which has a more general meaning of *knowledge or skill in a particular area*. Natural science, the study of the natural world, in which we would include biology, astronomy, geology, etc., is called **investigatio nātūrae**, *research into nature*, or **rerum nātūrae scientia**, *knowledge of nature*.

The Greeks and Romans felt that there was an intimate connection between **investigatio nātūrae**, and philosophy (**philosophia, -ae f**), which was the attempt to make a deeper sense out of the world and the place of humans in it. In fact, the people who discovered the principles of geometry and physics Pliny describes, are generally called *philosophers*, **philosophus, i m** (and **philosophia, -ae f**). Trying to find out the nature of the universe was philosophy; the nature of the universe and the meaning of life were the same.

One of the issues the **philosophi** contended with was what the universe was made of. Could it be reduced to constituent parts? Were there underlying principles to how the objects and living things in the world came into existence and passed away? How could you explain things like the force of winds, which had no substance but could blow down trees and houses? Very early on, **philosophi** tried to explain the world as a construct made by the intermixture of elements.

The most common view of antiquity was that there were four elements that made up all of the substance of the world: *earth* (**terra, -ae f**), *air* (**āēr, āēris, m**), *fire* (**ignis, ignis m**) and *water* (**aqua, -ae f**). **āēr** was also known as **spīritus, -ūs m**. (This is a fourth declension word, though many of its forms are similar to second declension.) **spīritus** means *breath* (c.f. English *respiration*) and therefore has the sense of *life-force*, which is why it also comes into English as *spirit*.

According to this view, the elements intermixed with one another, and the different proportions and combinations produced everything, both inanimate and living, in the **mundus**. It was the strength of this intermixture (which Pliny describes as a "net") that prevented the heaviest element (**terra**) from crashing down,

and the lightest element (**ignis**) from flying up – though earth, the heaviest element, occupied the center of the universe, and fire made up the stars.

While this was the majority view, some ancient philosophers adopted a different view of the material from which the world was made.

Democritus, a **philosophus** of the 5th century BCE, argued that the world was made up of tiny particles, called *atoma* in Greek, and translated into Latin as **primordia** (neuter plural, from **primordium, -i n**), *original (materials)*. These tiny atoms were the constituent parts of all of the matter in the universe. Titus Lucretius Carus, author of **De Rerum Nätürä**, a poetic treatise on the nature of the universe, uses several terms to describe these physics concepts:

- **corpora**, from **corpus, corporis, n**, means *matter*. (**corpus** also means *body*; our word *corpse* is related.)
- **materia, -ae f**, means *material* or *stuff*: e.g. **materia rerum**, *the material of things (i.e., from which things are made)*
- **primordia, -orum n. pl.**, means *atoms*

As Lucretius explains it, the **primordia** are invisible to the eye, but they permeate everything and everything in the world is made up of these **primordia** (rather than the **quattuor elementa** of popular belief). The space between the atoms is responsible for the difference between material things. Lucretius also explains the principle of the conservation of matter: nothing arises from nothing, and nothing can be obliterated; instead, when things vanish or are destroyed, they simply return to **corpora**, or *matter*, having been resolved into their constituent parts: **primordia**, or *atoms*.

In modern times, our observational capabilities have shown us that there are many different kinds of atoms, rather than only one, and that atoms are made up of protons, neutrons and electrons. All the same, it is remarkable that Greek and Roman philosophers achieved insights into physics with their technology, thinking as philosophers and working by analogy, that could only finally be tested and confirmed with 20th century technology.

XII. Reading and analysis: Elementa

This passage contrasts the two leading views of the universe: that it is made up of four elements, and that it is made up of atoms. Pliny simply describes the elements, without going into proofs, but Lucretius makes a number of analogies to support his contention that the invisible **primordia** make up all matter.

Gaius Plinius Secundus dicit:

sunt quattuor elementa. summum* elementum est ignis. ignis est materia omnium stellarum quae in caelo lücent. secundum elementum est äer; illud elementum quoque "spiritum" appellämus. spiritus fluit per omnia quae in mundo vitam habent. ignis est elementorum levissimum; terra est elementorum gravissimum. in medio mundo terra pendet, dum spiritus circum caelum celeriter fluit.
in medio mundo terra manet cum quarto elemento, aquä.

*summus, -a, -um:
highest

omnia elementa inter se nexum* faciunt. itaque levia elementa in caelum non fugiunt, graviaque non cadunt. omnia in loco suo manent, dum mundus aeternus* volvit.

Titus Lucretius Carus tamen dicit in libris suis:

natura omnia resolvat* rursus* in corpora. nihil in mundo perit; omnia redeunt ad corpora.

oculi* humani primordia non possunt videre*, quod minima sunt. primordia tamen sunt in omnibus.

(Lucretius offers a proof of the existence of tiny, invisible atoms by an analogy between the force of visible rivers and invisible winds.)

argumentum invenimus in ventos qui circum terram fluunt. magna flumina sunt fortia; magna vi* fluunt et multa destruunt. oculi humani aquas vident quae per terram fluunt. venti quoque sunt fortissimi; casus silvasque destruunt, sed oculi nostri* eos non vident. itaque dico: primordia sunt in fluminibus, quae videmus; primordia quoque sunt in ventis, etsi* ea non videmus.

*nexus, -us m: an interwoven net
*aeternus: eternally
*resolvō, -āre: dissolve
*rursus: back (i.e. again)
oculus, -i m: eye
possunt videre: (they) are able to see

*magna vi: with great force

*noster, nostra, nostrum: our
*etsi: even if

© Practicum: Gender, Number and Case ©

For each of the underlined words, circle the correct gender, number and case.

ignis est materia omnium stellarum quae in caelo lucet. . . spiritus fluit per omnia quae in mundo vitam habent. ignis est elementorum levissimum; terra est elementorum gravissimum. in medio mundo terra pendet, dum spiritus circum caelum celeriter fluit.

Word	Gender	Number	Case
ignis	<i>m f n</i>	<i>s pl</i>	<i>nom. acc. gen. dat. abl.</i>
stellarum	<i>m f n</i>	<i>s pl</i>	<i>nom. acc. gen. dat. abl.</i>
caelo	<i>m f n</i>	<i>s pl</i>	<i>nom. acc. gen. dat. abl.</i>
omnia	<i>m f n</i>	<i>s pl</i>	<i>nom. acc. gen. dat. abl.</i>
vitam	<i>m f n</i>	<i>s pl</i>	<i>nom. acc. gen. dat. abl.</i>
elementorum	<i>m f n</i>	<i>s pl</i>	<i>nom. acc. gen. dat. abl.</i>
levissimum	<i>m f n</i>	<i>s pl</i>	<i>nom. acc. gen. dat. abl.</i>
terra	<i>m f n</i>	<i>s pl</i>	<i>nom. acc. gen. dat. abl.</i>

© Practicum: Translation © Translate the second paragraph (starting with in medio mundo . . .).

📍 **Practicum: Relative Clauses and Antecedents** 📍 In the reading, find three sentences with relative clauses and write the sentences below. Then, put parentheses around the relative clause and underline the antecedent.

1. _____

2. _____

3. _____

📍 **Practicum: Information** 📍 Explain Lucretius' proof of the existence of primordia, based on the water/wind comparison.

XIII. Vocabulary

Nouns

āēr, aeris *m* air
aetas, aetatis *f* age, period
animal, animālis *n* animal(i-stem)
annus, -ī *m* year
argumentum, -ī *n* proof, argument
astrum, -ī *n* star
caelum, -ī *n* sky
corpus, -ōris *n* body; **corpora** (pl.) = matter
elementum, -ī *n* element
flūmen, flūminis *n* river
homo, hominis *m & f* human being
ignis, -ignis *m* fire (i-stem)
luna, -ae *f* moon
lux, lūcis *f* light
materia, -ae *f* material, stuff
mundus, -ī *m* the world, the universe
nihil nothing (forms do not change)
nōmen, nōminis *n* name
nox, noctis *f* night (i-stem)
orbis, orbis *m* sphere, circle (i-stem);
orbis terrārum, the whole world
philosophus, -ī *m* philosopher
primordia, -ōrum *n pl* atoms

scientia, -ae *f* knowledge, expertise, "science"
sīdus, -eris *n* star;
sōl, sōlis *m* sun
spīritus, spīritūs *m* breath, spirit, air (fourth declension word)
stella, -ae *f* star
tempus, -oris *n* time
terra, -ae *f* the earth; land, country
ventus, -ī *m* wind

Adjectives

brevis, breve short, brief
calidus, -a, -um hot
fortis, forte brave, strong
frigidus, -a, -um cold
gravis, grave heavy, serious
levis, leve light
longus, -a, -um long
medius, -a, -um the middle
omnis, omne all, every
proximus, -a, -um nearest, very near
Superlatives:
maximus, -a, -um biggest
minimus, -a, -um smallest
optimus, -a, -um best

pessimus, -a, -um *worst*

Verbs

appellō (1) *name, call*

cadō, -ere, cecidi, casus *fall*

destruo, -ere, destruxi, destructum
destroy

festinō (1) *hurry, hasten*

fluō, -ere, fluxi, fluxus *flow*

inveniō, -ire, -vēnī, -ventus *find,*
discover, invent

lūceō, -ere, luxī, luctus *shine*

moveō, -ere, mōvi, mōtus *move*

pendeō, -ere, pependi *hang (down)*

sciō, -ire, scivi, scitus *know*

volvō, -ere, volvi, volutus *revolve*

Other Words

celeriter *quickly (adv.)*

circum (+ acc.) *around (prep.)*

inter (+acc.) *between, among (prep.)*

lentē *slowly (adv.)*

qui, quae, quod *who, which*
(pronoun)

Appendix 1: Comprehensive Third Declension Paradigm This paradigm focuses on the variations you find for neuter forms, i-stems, and adjectives. You notice that overall, there aren't many. (Note that the singular forms are on top, the plurals on the bottom):

Singular

<i>case</i>	<i>m/f noun</i>	<i>m/f i-stem</i>	<i>m/f adj</i>	<i>neuter noun</i>	<i>neuter i-stem</i>	<i>neuter adj.</i>
nom.	(varies)	↯	↯	(varies)	↯	↯
acc.	-em	↯	↯	(varies)	↯	↯
gen.	-is	↯	↯	↯	↯	↯
dat.	-ī	↯	↯	↯	↯	↯
abl.	-e	↯	-ī	-e	-ī	↯

Plural

<i>case</i>	<i>m/f noun</i>	<i>m/f i-stem</i>	<i>m/f adj</i>	<i>neuter noun</i>	<i>neuter i-stem</i>	<i>neuter adj.</i>
nom.	-ēs	↯	↯	-a	-ia	↯
acc.	-ēs	↯	↯	-a	-ia	↯
gen.	-um	-ium	↯	-um	-ium	↯
dat.	-ibus	↯	↯	↯	↯	↯
abl.	-ibus	↯	↯	↯	↯	↯

Appendix 2: First, Second and Third Declension Paradigms Endings-Only, Left Arrow, Adjective variations in parentheses

Singular

case	1 st decl.	2 nd masc.	2 nd neuter	3 rd m/f	3 rd neuter
nom.	-a	-us/-er	-um	---	---
acc.	-am	-um	↵	-em	---
gen.	-ae	-ī	↵	-is	↵
dat.	-ae	-ō	↵	-ī	↵
abl.	-ā	-ō	↵	-e (-i)	↵

Plural

case	1 st decl.	2 nd masc.	2 nd neuter	3 rd m/f	3 rd neuter
nom.	-ae	-ī	-a	-ēs	-a (-ia)
acc.	-ās	ōs	-a	-ēs	-a (-ia)
gen.	-ārum	-ōrum	↵	-um (-ium)	↵
dat.	-īs	↵	↵	-ibus	↵
abl.	-īs	↵	↵	-ibus	↵

Same information, sample words, adj. variations shown with omnis, -e

case	1 st decl.	2 nd masc.	2 nd neuter	3 rd m/f	3 rd neuter
nom.	lun-a	vent-us/ag-er	astr-um	(lux)	(tempus)
acc.	lun-am	vent-um	astr-um	luc-em	(tempus)
gen.	lun-ae	vent-ī	astr-ī	luc-is	tempor-is
dat.	lun-ae	vent-ō	astr-ō	luc-ī	tempor-ī
abl.	lun-ā	vent-ō	astr-ō	luc-e (omn-i)	tempor-e

Plural

case	1 st decl.	2 nd masc.	2 nd neuter	3 rd m/f	3 rd neuter
nom.	lun-ae	vent-ī	astr-a	luc-ēs	tempor-a (omn-ia)
acc.	lun-ās	vent-ōs	astr-a	luc-ēs	tempor-a (omn-ia)
gen.	lun-ārum	vent-ōrum	astr-ōrum	luc-um (omn-ium)	tempor-um (omn-ium)
dat.	lun-īs	vent-īs	astr-īs	luc-ibus	tempor-ibus
abl.	lun-īs	vent-īs	astr-īs	luc-ibus	tempor-ibus

Appendix 3: Four rules for determining i-stems

Three types of nouns are i-stems:

1. **m/f nouns that have one syllable in the nominative, and the stem ends with two consonants.**
 - **ex: möns, montis m** *mountain*. **möns** is one syllable, **mont-** ends with 2 consonants, so when you say *of the mountains*, you'll say **montium** instead of montum.
 - **ex: nox, noctis f** *night*. **nox** is one syllable, **noct-** ends in 2 consonants. So when you say *of the nights*, you'll say **noctium** instead of noctum.
 - **But not: söl, sölis m** *the sun*. **söl** is one syllable, but **söl-** does not end in 2 consonants. So *of the suns* would be **solum** not sölium.
2. This category is kind of hazy and has exceptions, but here goes: **m/f nouns where the nominative and genitive have the same number of syllables, and the nom. form ends in -es or -is.**
 - **ex.: piscis, piscis m** *fish*. **piscis** is the same nom. & gen., so of course it has the same number of syllables, and the nom. form ends in **-is**. So if you want to say *of the fishes*, you say **piscium** instead of piscum.
 - **ex.: orbis, orbis m** *sphere*. **orbis** is the same nom. & gen., so has the same number of syllables, and the nom. form ends in **-is**. So if you want to say *of the spheres*, you say **orbium** instead of orbum.
 - There are some blatant exceptions to the rule, though, such as **canis, canis m & f** *dog*, which ought to be an i-stem but isn't.
3. **Neuter words that end in -ar, -al, or -e.** Neuter words are different in four places rather than just one: **-ium** for genitive plural, **-ia** for nom. & acc. plural, and **-i** for ablative singular.
 - **ex.: animal, animälis n** *animal*. It ends in **-al**, so it is an i-stem. Its genitive plural is **animälium** not animälum, its nominative and accusative plural is **animälia** and not animäla, and its ablative singular is **animälī** not animäle.
 - **mare, maris n** *sea*. It ends in **-e**, so it is an i-stem. Its genitive plural is **marium** not marum, its nominative and accusative plural is **maria** and not mara, and its ablative singular is **marī** not mare.
4. **Most third declension adjectives are i-stems:** they have the same variations in form that noun i-stems do, plus they have ablative singular in **-i** and not **-e**.

📍 **Practicum: Which are i-stems?** 📍 For each word, (a) check whether it is an i-stem from its dictionary form, and (b) circle the rule (from the description above) that makes it an i-stem.

1. arx, arcis f	i-stem	not an i-stem	#1	#2	#3	#4
2. civis, civis m&f	i-stem	not an i-stem	#1	#2	#3	#4
3. mons, montis m	i-stem	not an i-stem	#1	#2	#3	#4
4. flös, flöris n	i-stem	not an i-stem	#1	#2	#3	#4
5. föns, fontis f	i-stem	not an i-stem	#1	#2	#3	#4
6. arbor, arböris f	i-stem	not an i-stem	#1	#2	#3	#4

7. nävis, nävis f	i-stem	not an i-stem	#1	#2	#3	#4
8. pater, patris m	i-stem	not an i-stem	#1	#2	#3	#4
9. pars, partis f	i-stem	not an i-stem	#1	#2	#3	#4
10. ius, iuris n	i-stem	not an i-stem	#1	#2	#3	#4
11. urbs, urbis f	i-stem	not an i-stem	#1	#2	#3	#4
12. piscis, piscis m	i-stem	not an i-stem	#1	#2	#3	#4
13. mare, maris n	i-stem	not an i-stem	#1	#2	#3	#4
14. tempestas, tempestatis f	i-stem	not an i-stem	#1	#2	#3	#4
15. tempus, temporis n	i-stem	not an i-stem	#1	#2	#3	#4