**The Big Bang and Biblical accounts of creation**

Document packet

1. **Bellringer activity**



1. **Accessing prior knowledge and beliefs**

*No readings for this section.*

1. **Foundational readings**

**Reading A**

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| **The Big Bang theory**  Scientists have gathered a lot of evidence and information about the Universe. They have used their observations to develop a theory called the Big Bang. The theory states that about 13.7 billion years ago all the matter in the Universe was concentrated into a single incredibly tiny point. This began to enlarge rapidly in a hot explosion, and it is still expanding today.  Evidence for the Big Bang includes:   * all other galaxies are moving away from us * the further away a galaxy is, the faster it is moving away   These two features are found in explosions - the fastest moving objects end up furthest away from the explosion.  Scientists have also detected cosmic microwave background radiation or CMBR. This is received from all parts of the Universe and is thought to be the heat left over from the original explosion.  **Red shift and the Big Bang**  You may have noticed that when an ambulance or police car goes past, its siren is high-pitched as it comes towards you, and then becomes low-pitched as it goes away. This effect, where there is a change in frequency and wavelength, is called the Doppler effect. It happens with any wave source that moves relative to an observer.  This happens with light, too, and is called 'red-shift'. Our Sun contains helium. We know this because there are black lines in the spectrum of the light from the Sun where helium has absorbed light. These lines form the absorption spectrum for helium.  Colour spectrum of the Sun  When we look at the spectrum of a distant star, the absorption spectrum is there, but the pattern of lines has moved (or ‘shifted’) towards the red end of the spectrum, as you can see:  Colour spectrum of a distant star  This is called **red-shift**. It is a change in frequency of the position of the lines.  Astronomers have found that the further from us a star is, the more its light is red-shifted. This tells us that distant galaxies are moving away from us, and that the further away a galaxy is, the faster it is moving away.  Since we cannot assume that we have a special place in the Universe, this is evidence for a generally expanding Universe. It suggests that everything is moving away from everything else.  **Interpreting the evidence**  Summary of some of the evidence of the Big Bang and its interpretation.   |  |  | | --- | --- | | **Evidence** | **Interpretation** | | Light from other galaxies is red-shifted | Other galaxies are moving away from us | | The further away the galaxy, the more its light is red-shifted | The most likely explanation is that the whole Universe is expanding and this supports the theory that the start of the Universe could have begun with a single explosion |     Source: <https://www.bbc.co.uk/bitesize/guides/zqfgmnb/revision/1> |

**Reading B**

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| **Genesis 1:1-10**  In the beginning, when God created the heavens and the earth and the earth was without form or shape, with darkness over the abyss and a mighty wind sweeping over the waters—Then God said: Let there be light, and there was light. God saw that the light was good. God then separated the light from the darkness. God called the light “day,” and the darkness he called “night.” Evening came, and morning followed—the first day. Then God said: Let there be a dome in the middle of the waters, to separate one body of water from the other. God made the dome, and it separated the water below the dome from the water above the dome. And so it happened. God called the dome “sky.” Evening came, and morning followed—the second day. Then God said: Let the water under the sky be gathered into a single basin, so that the dry land may appear. And so it happened: the water under the sky was gathered into its basin, and the dry land appeared. God called the dry land “earth,” and the basin of water he called “sea.” God saw that it was good.  **Psalm 104:24-25**  How varied are your works, LORD!  In wisdom you have made them all; the earth is full of your creatures.  There is the sea, great and wide!  It teems with countless beings,  living things both large and small.  **John 1:1-5**    In the beginning was the Word, and the Word was with God, and the Word was God. He was in the beginning with God. All things came to be through him, and without him nothing came to be. What came to be through him was life, and this life was the light of the human race; the light shines in the darkness, and the darkness has not overcome it. |

1. **Interpretations readings**

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| **Passage A**    This [big bang] story of origins is entirely fiction. But sadly, many people claim to believe the big-bang model. It is particularly distressing that many professing Christians have been taken in by the big bang, perhaps without realizing its atheistic underpinnings. They have chosen to reinterpret the plain teachings of Scripture in an attempt to make it mesh with secular beliefs about origins. . . .  Ultimately, the big bang is a secular story of origins. When first proposed, it was an attempt to explain how the universe could have been created without God. Really, it is an alternative to the Bible, so it makes no sense to try to “add” it to the Bible. Let us examine some of the profound differences between the Bible and the secular big-bang view of origins.    The Bible teaches that God created the universe in six days (Genesis 1; Exodus 20:11). It is clear from the context in Genesis that these were days in the ordinary sense (i.e., 24-hour days) since they are bounded by evening and morning and occur in an ordered list (second day, third day, etc.). Conversely, the big bang teaches the universe has evolved over billions of years.    The Bible says that earth was created before the stars and that trees were created before the sun. However, the big-bang view teaches the exact opposite. The Bible tells us that the earth was created as a paradise; the secular model teaches it was created as a molten blob. The big bang and the Bible certainly do not agree about the past.    Source: <https://answersingenesis.org/big-bang/does-the-big-bang-fit-with-the-bible/> |

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| **Passage B**    *Interview from an interview with physicist Lawrence Krauss*    Well, the title of [my] book, "A Universe from Nothing: Why There is Something Rather than Nothing" deals with this question. It's been around for as long as people have really started to ask questions about the universe and is really at the heart of a lot of the world's religions. Why is there something rather than nothing?    If we live in a universe full of stuff, how did it get here? And many people think that very question implies the need for a creator. But what's truly been amazing, and what the book's about is the revolutionary developments in both cosmology and particle physics over the past 30 or 40 years that have not only changed completely the way we think about the universe but made it clear that there's a plausible case for understanding precisely how a universe full of stuff, like the universe we live in, could result literally from nothing by natural processes.    And while it's a little pretentious, I'll be pretentious anyway, the idea, I think, is similar, if you think about it, to the origin of life, Darwin's demonstration that life, which appears to be designed here on Earth, the diversity of life can actually arise, that diversity can arise by natural causes.    And we don't yet know the true origin of life, but we think we'll understand it by chemistry, and what we're discovering is that in fact physics has suggested that maybe the same is true for the whole universe, that we don't need a creator. . . .  So we're living at this rare cosmic instant in which we're lucky enough to observe the Big Bang. By rare—by cosmic instant I mean a few hundred billion years, but in a cosmic sense that's an instant. And so we're fortunate to be able to see that. At the same time, of course, it should give us some cosmic humility because it suggests—it indicates something that's very important to realize.  Source: <https://www.npr.org/2012/01/13/145175263/lawrence-krauss-on-a-universe-from-nothing> |

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| **Passage C**    *Excerpt from physicist Stephen Barr’s “Modern Physics, the Beginning, and Creation,” pp. 127-28, 131.*  That the Big Bang was very likely a “natural event,” in the sense of obeying the laws of physics, is not a theological problem. It is like saying that the first sentences of *Hamlet* obey the laws of English grammar just as do all the other sentences in the play. One would expect nothing else. It is only a problem if one falls into crude anthropomorphism and imagines creation to be a physical process, like God setting a lighted match to a fuse. But that is not the Christian conception of Creation. Creation is the act by which God gives reality to the universe, and makes it not merely a hypothetical or possible universe, but an actually existing universe. He does not supply energy, as a match does to an explosive, he supplies reality. God supplies this reality equally to every part of the universe—all events at all times and places—just as Shakespeare equally brought forth every word of the play *Hamlet.* . . .    It seems to be the case . . . that the universe had a beginning. Faced with the fact, some atheists now pin their hopes on the idea that physics will “explain” this beginning. They believe that if the beginning of the universe can be shown to be natural, then the need for a supernatural cause of the universe would be avoided. We have already seen the mistake involved in such thinking. The beginning of the universe unfolding in accordance with natural laws no more renders a Creator unnecessary than the opening passages of a book unfolding in accordance with the laws of grammar renders an author unnecessary. |

1. **Catholic magisterial teaching on science and the Big Bang**

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| *Excerpt from* Catechism of the Catholic Church*, no. 159.*  Methodical research in all branches of knowledge, provided it is carried out in a truly scientific manner and does not override moral laws, can never conflict with the faith, because the things of the world and the things of faith derive from the same God. The humble and persevering investigator of the secrets of nature is being led, as it were, by the hand of God in spite of himself, for it is God, the conserver of all things, who made them what they are. |

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| *Excerpt from* [*Address*](https://zenit.org/2014/10/27/pope-francis-address-at-inauguration-of-bronze-bust-of-benedict-xvi/) *of Pope Francis on October 27, 2014*  When we read in Genesis the account of Creation, we risk imagining that God was a magician, with such a magic wand as to be able to do everything. However, it was not like that. He created beings and left them to develop according to the internal laws that He gave each one, so that they would develop, and reach their fullness. . . . And thus creation went forward for centuries and centuries, millennia and millennia until it became what we know today, in fact because God is not a demiurge or a magician, but the Creator who gives being to all entities. The beginning of the world was not the work of chaos, which owes its origin to another, but it derives directly from a Supreme Principle who creates out of love. The Big-Bang, that is placed today at the origin of the world, does not contradict the divine intervention but exacts it. The evolution in nature is not opposed to the notion of Creation, because evolution presupposes the creation of beings that evolve. |