AQA GCSE Science Combined Foundation

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
01.1	microwaves x-rays		1 1	AO1 6.6.2.1
01.2	transverse		1	AO1 6.6.2.1
01.3	energy		1	AO1 6.6.2.1
02.1	frequency = $\frac{20}{10}$ = 2 (Hz)		1 1	AO2 6.6.1.2
02.2	wavelength = $\frac{0.3}{20}$ = 0.015 m		1 1	AO2 6.6.1.2
02.3	speed = frequency × wavelength		1	AO1 6.6.1.2
02.4	speed = 2 × 0.015 = 0.03 m/s		1 1 1	AO2 6.6.1.2
03.1	radio waves – television microwaves – mobile phones		1 1	AO1 6.6.2.4
03.2	x-rays to look at broken bones	accept any correct use of medical x-ray imaging	1 1	AO1 6.6.2.4

AQA GCSE Science Combined Foundation

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
03.3	skin cancer/premature aging of the skin		1	AO1 6.6.2.3
03.4	sievert		1	AO1 6.6.2.3
04	Example answer: both waves are used for imaging our eyes detect visible light x-rays are used to look inside the body x-rays have a higher frequency than visible light x-rays have a shorter wavelength than visible light large doses of visible light can cause blindness smaller doses of X-rays can cause cancer	accept reverse statements	6	AO3 6.6.2.1 6.6.2.3
05.1	C above a place where the coils are close together R above a place where the coils are far apart		1 1	AO2 6.6.1.1
05.2	1.5 m = 3 waves $\frac{1.5}{3}$ = 0.5 m		1 1	AO2 6.6.1.1 6.6.1.2
05.3	speed = frequency × wavelength	accept v = fλ or correct rearrangements	1	AO1 6.6.1.2

AQA GCSE Science Combined Foundation

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
05.4	1.0 m/s = frequency frequency = $\frac{1.0}{0.5}$ = 2 Hz		1 1 1	AO1 AO2 6.6.1.1 6.6.1.2
05.5	longitudinal		1	AO1 6.6.1.2
06.1	period = the time for one wave in seconds period = $\frac{1}{\text{frequency}}$		1 1	AO1 6.6.1.2
06.2	period = $\frac{1}{500}$ = 0.002 (s)		1 1	AO2 6.6.1.2
06.3	500 x 5 = 2500		1 1	AO2 6.6.1.2
06.4	m/s		1	AO1 6.6.1.2
07.1	C		1	AO1 6.6.2.2
07.2	refracted direction		1 1	AO1 6.6.2.2

AQA GCSE Science Combined Foundation

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
07.3	it goes straight through/it does not change direction		1	AO2 6.6.2.2
08.1	Example answers: any three improvements and reasons from: 1. use an infrared detector instead of the thermometer because it will be more sensitive/give a more accurate reading/have better resolution 2. use the ruler to make sure the detector is the same distance from each can so that it is a fair test / it is a control variable 3. use a lid on each can to ensure the temperature of the water stays the same 4. same surface area of can so that it is a fair test / it is a control variable 5. surroundings have the same temperature so that it is a fair test / it is a control variable	one mark for each improvement one mark for each reason (which must be consistent with the improvement)	6	AO3 6.6.2.2
08.2	B it (thermometer) has the highest temperature, so is emitting the most infrared radiation		1 1	AO2 6.6.2.2
09.1	visible light has a longer wavelength than ultraviolet radiation visible light has a lower frequency than ultraviolet radiation		1 1	AO2 6.6.2.1
09.2	(increased risk of) cancer/mutation of genes		1	AO1 6.6.2.3
09.3	frequency the higher the frequency, the more energy the waves carry		1 1	AO3 6.6.2.1

AQA GCSE Science Combined Foundation

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
10.1	zero/0		1	AO2 6.5.4.1.1
10.2	speed = $\frac{\text{distance}}{\text{time}}$		1	AO1 6.5.4.1.2
10.3	distance = 4.5 miles × 1609 = 7240.5 m time = 20 min × 60s = 1200 s speed = $\frac{7240.5}{1200}$ = 6.0 m/s		1 1 1 1	AO1 AO2 6.5.4.1.2
10.4	the speed varies over the journey/the calculation assumes the speed is constant		1	AO3 6.5.4.1.2
10.5	there is a force of friction/air resistance/resultant force is zero Newton's first law says that an object moves with a steady speed when the resultant force is zero/the forces cancel out		1 1 1	AO3 6.5.4.2.1