

Please write clearly, in block capitals.

Centre number

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Learner number

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Surname

Forename(s)

Learner signature

Level 1/2 Award STEM

The Fundamentals of STEM

Specimen 2017

Morning Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:

- a ruler
- a calculator

Instructions

- Use black ink or black ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- There are 80 marks available on this paper.
- The marks for questions are shown in brackets.
- You are expected to use a calculator where appropriate.

Advice

In all calculations, show clearly how you work out your answer.

Answer **all** questions in this section.

For questions with four responses only **one** answer per question is allowed.


For each answer completely fill in the circle alongside the appropriate answer.


CORRECT METHOD



WRONG METHODS



If you want to change your answer you must cross out your original answer as shown. 

If you wish to return to an answer previously crossed out, ring the answer you now wish to select as shown. 

0 1 What shape is used to make a geodesic dome?

A Octagon

B Triangle

C Square

D Decagon

[1 mark]

0 2 What forces act as a pair on a geodesic dome?

A Compression and torsion

B Torsion and tension

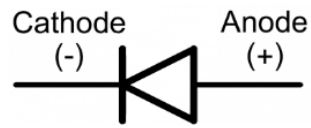
C Tension and compression

D Friction and compression

[1 mark]

0 3

What is the name of the part shown in the picture and diagram below?



A LDR

B LED

C Resister

D Bulb

[1 mark]

0 4

What energy conversion takes place inside a solar panel like the one in a deconstructed calculator?

A Light → chemical

de a

B Chemical → light

C Kinetic → electrical

D Light → electrical

[1 mark]

0 5

Which of these statements is true about the particles in a suspension?

A The largest particles sink the fastest.

B The smallest particles sink the fastest.

C All particles sink at the same speed.

D All particles float.

[1 mark]

0 6

Titanium dioxide is a white solid which cannot dissolve in oil or water and can be used to form a suspension.

Give **two** reasons why a suspension of titanium dioxide is used in sunscreens.

1

2

[2 marks]

0 7

The Fixperts process involves people known as the Fixpert, Master Fixpert and Fixpartner.

Identify who these people should be by drawing lines between **Column A** and **Column B**.

Column A

Fixpert

Master Fixpert

Fixpartner

Column B

Your teacher

Your customer

You

[2 marks]

0 8

A learner tested a paper prototype of drone blades to see how long it took to drop to the floor from a fixed height.

0 8. 1

What is a prototype and why is it used?

[2 marks]

0 8. 2 Table 1 shows the learner's results.

Table 1

Drop number	Time taken (seconds)
1	1.32
2	1.41
3	1.36

Calculate the average (mean) time taken for the drone blades to drop to the floor.
Give your answer to two decimal places.

[2 marks]

0 8. 3 Give **two** reasons for the purpose of testing.

[2 marks]

0 8. 4 Give **two** factors about the drone blades that the learner could change. What effect do you think each factor would have on the time taken to drop to the floor?

Factor 1:

Effect on time taken:

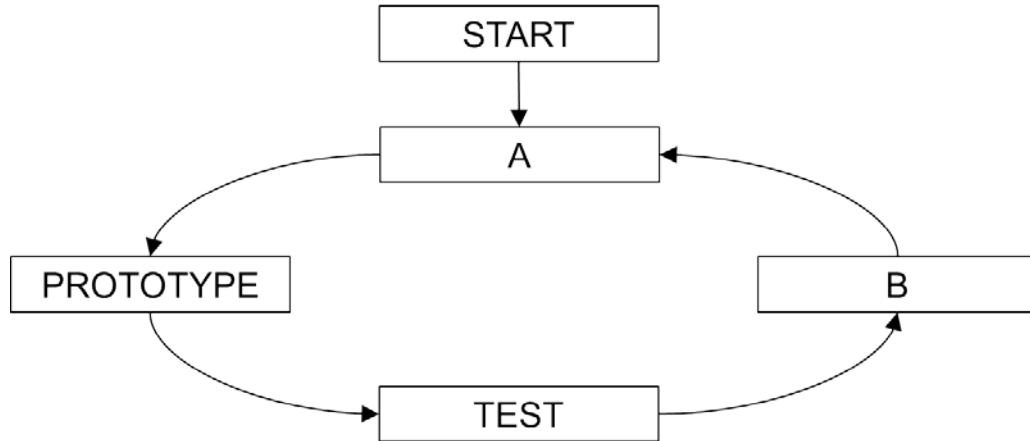
Factor 2:

Effect on time taken:

[4 marks]

- 0 9** The iterative process is used in STEM industries to manufacture products from an initial concept. This process is shown in **Figure 1**.

Figure 1



- 0 9. 1** Identify the missing stages, **A** and **B**, in the iterative process.

A

B

[2 marks]

- 0 9. 2** Give **two** methods of how a STEM industry might make a prototype.

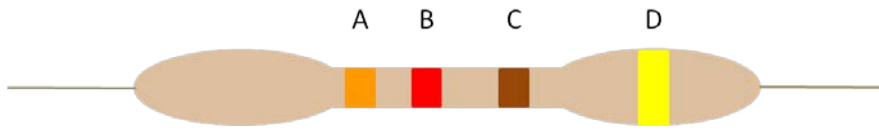
Example 1

Example 2

[2 marks]

1 0

When STEM industries create products they work to tolerances. **Figure 2** shows a resistor.

Figure 2**1 0. 1**

Which band in **Figure 2** refers to the tolerance of the resistor?

A**B****C****D****[1 mark]****1 0. 2**

What does the tolerance of the resistor mean?

[1 mark]**1 0. 3**

Why is tolerance important in STEM industries?

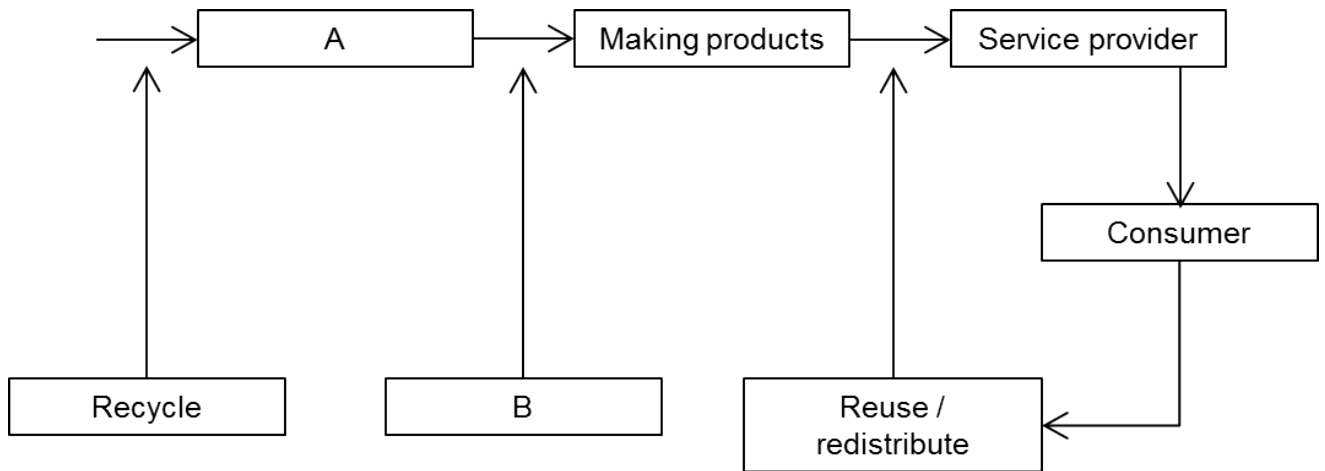
How is it used?

[2 marks]

1 1

The Circular Economy Model aims to circulate materials. **Figure 3** shows part of the Circular Economy Model.

Figure 3



1 1. 1

What are the missing parts of the Circular Economy Model.

A

B

[2 marks]

1 1. 2

Give **two** environmental benefits of recycling.

Benefit 1

Benefit 2

[2 marks]

1 1. 3

Explain why there can be an economic benefit of recycling.

[1 mark]

1 1. 4 Why is reusing or redistributing better, in most cases, than recycling?

[4 marks]

1 1. 5 Explain why recycling the steel in a car body might be better than reusing the steel.

[2 marks]

1 2 New technologies are emerging and developing all the time. Stereolithography is a process that has enabled STEM industries to produce prototypes more accurately and more economically.

1 2. 1 What is another name for stereolithography?

[1 mark]

1 2. 2 How does the process of stereolithography work?

[2 marks]

1 2. 3 What material are these prototypes made out of?

[1 mark]

1 3

The photograph below shows an electric car. Describe **two** examples of how knowledge of **each** aspect of STEM contributes to the development and production of an electric car.

**Science**

Technology

Engineering

Maths

[8 marks]

1 4

John is a learner. He had a skateboarding accident and his left leg was broken in several places and had to be pinned together with a metal plate. John will be on crutches for several months and is finding it difficult to get around school with all his books.

The Fixpert process could help John solve his problem of getting around school.

There are five stages of the Fixpert process. Producing Prototypes and Testing have been removed. Identify the remaining stages in the correct order, explaining why they happen.

[6 marks]

1.

[2 marks]

2.

[2 marks]

3. Producing Prototypes

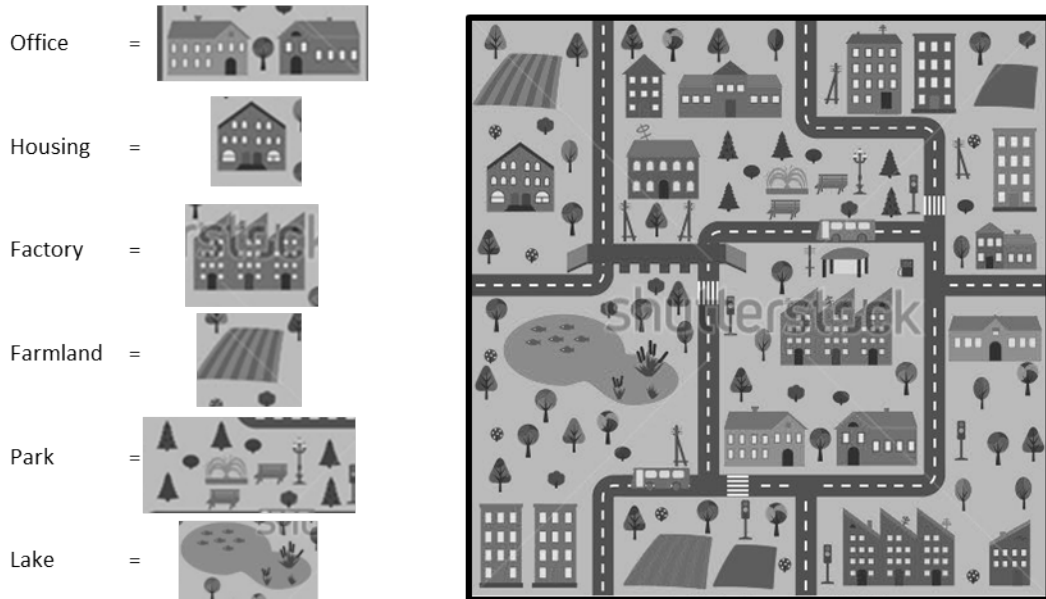
4. Testing

5.

[2 marks]

1 5

The government of a country are creating a brand new city. The map below shows the initial plans for the city. There are seven locations in the city labelled **A** to **G**.

**1 5. 1**

Explain why locations **A** and **C** might be suitable for a school.

A

C

[2 marks]**1 5. 2**

Which of the locations (**A** or **C**) do you think would be the best location for the school? Give **one** reason for your answer.

Location

Reason

[1 mark]

1 5. 3 Planners are deciding where to build a hospital for the city. There is some disagreement about whether to build the hospital in location **D**, **F** or **G**.

Give **one** advantage and **one** disadvantage of each location.

Location D

[2 marks]

Location E

[2 marks]

Location G

[2 marks]

Give your opinion as to the best location for this hospital, stating three reasons why.

Location

Reason 1

Reason 2

Reason 3

[3 marks]

[9 marks total]

1 **5.** **4**

Construction is an important STEM industry. Give **one** example of how Science, Technology, Engineering and Maths would each need to be considered during the construction of this new hospital.

Science

Technology

Engineering

Maths

[4 marks]

1 **5.** **5**

Communication is another important STEM industry. Give **one** example of how Science, Technology, Engineering and Maths would each need to be considered in planning and building the city's communications network.

[8 marks]

Total 80 marks

Level 1/ Award STEM

UNIT 3: FUNDAMENTALS OF STEM

Mark scheme

Specimen materials

Version 1.0

Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Assessment Writer.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this mark scheme are available from aqa.org.uk

Level of response marking instructions

Level of response mark schemes are broken down into levels, each of which has a descriptor. The descriptor for the level shows the average performance for the level. There are marks in each level.

Before you apply the mark scheme to a student's answer read through the answer and annotate it (as instructed) to show the qualities that are being looked for. You can then apply the mark scheme.

Step 1 Determine a level

Start at the lowest level of the mark scheme and use it as a ladder to see whether the answer meets the descriptor for that level. The descriptor for the level indicates the different qualities that might be seen in the student's answer for that level. If it meets the lowest level then go to the next one and decide if it meets this level, and so on, until you have a match between the level descriptor and the answer. With practice and familiarity you will find that for better answers you will be able to quickly skip through the lower levels of the mark scheme.

When assigning a level you should look at the overall quality of the answer and not look to pick holes in small and specific parts of the answer where the student has not performed quite as well as the rest. If the answer covers different aspects of different levels of the mark scheme you should use a best fit approach for defining the level and then use the variability of the response to help decide the mark within the level, ie if the response is predominantly level 3 with a small amount of level 4 material it would be placed in level 3 but be awarded a mark near the top of the level because of the level 4 content.

Step 2 Determine a mark Once you have assigned a level you need to decide on the mark. The descriptors on how to allocate marks can help with this. The exemplar materials used during standardisation will help. There will be an answer in the standardising materials which will correspond with each level of the mark scheme. This answer will have been awarded a mark by the Lead Examiner. You can compare the student's answer with the example to determine if it is the same standard, better or worse than the example. You can then use this to allocate a mark for the answer based on the Lead Examiner's mark on the example.

You may well need to read back through the answer as you apply the mark scheme to clarify points and assure yourself that the level and the mark are appropriate.

Indicative content in the mark scheme is provided as a guide for examiners. It is not intended to be exhaustive and you must credit other valid points. Students do not have to cover all of the points mentioned in the Indicative content to reach the highest level of the mark scheme.

An answer which contains nothing of relevance to the question must be awarded no marks.

Question number	Answer
01	B
02	C
03	B
04	D
05	A

1 mark each (total = 5 marks)
(Target: AO1; 5 marks)

Qu	Marking guidance	Total marks
06	<p>Titanium dioxide is a white solid which cannot dissolve in oil or water and can be used to form a suspension.</p> <p>Give two reasons why a suspension of titanium dioxide is used in sunscreens.</p> <p>Marks for this question: AO1 = 2 marks</p> <p>Award one mark for each of the following points up to a maximum of two marks.</p> <ul style="list-style-type: none"> • Forms a white layer on the skin • Prevents UV rays from reaching the skin <p style="text-align: right;">Maximum 2 marks</p>	2
07	<p>The Fixperts process involves people known as the Fixpert, Master Fixpert and Fixpartner.</p> <p>Identify who these people should be by drawing lines between Column A and Column B.</p> <p>Marks for this question: AO1 = 2 marks</p> <p>Award two marks if all three correct and one mark if two or one correct</p> <ul style="list-style-type: none"> • Fixpert = You • Master fixpert = your teacher • Fixpartner = Your client <p style="text-align: right;">Maximum 2 marks</p>	2
Qu	Marking guidance	Total

		marks
08.1	<p>A learner tested a paper prototype of drone blades to see how long it took to drop to the floor from a fixed height.</p> <p>What is a prototype and why is it used?</p> <p>Marks for this question: AO1 = 2 marks</p> <p>Award one mark for each of the following points up to maximum of two:</p> <ul style="list-style-type: none"> • A Prototype is the original model of something • Other models are developed from the Prototype • Is used to Test or Trial an idea <p style="text-align: right;">Maximum 2 marks</p>	2
08.2	<p>Calculate the average (mean) time taken for the drone blades to drop to the floor.</p> <p>Give your answer to two decimal places.</p> <p>Marks for this question: AO1 = 1 mark, AO3 = 1 mark</p> <p>Award one mark for correct working</p> <ul style="list-style-type: none"> • Average (mean) = $4.09/3$ <p>Award two marks for correct answer to two decimal places (with or without working)</p> <p style="text-align: center;">Average = 1.36333 2 DP = 1.36</p> <p style="text-align: right;">Maximum 2 marks</p>	2
08.3	<p>Give two reasons for the purpose of testing.</p> <p>Marks for this question: AO1 = 2 marks</p> <p>Award one mark for each of the following points up to a maximum of two marks:</p> <ul style="list-style-type: none"> • To determine if the prototype works in different conditions (eg waterproof, durability, flexibility etc) • To determine what improvements need to be made, if any • To allow the Fixpartner to give their feedback <p style="text-align: right;">Maximum 2 marks</p>	2

Qu	Marking guidance	Total
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		marks
08.4	<p>Give two factors about the drone blades that the learner could change. What effect do you think each factor would have on the time taken to drop to the floor?</p> <p>Marks for this question: AO1 = 2 marks, AO3 = 2 marks</p> <p>Award maximum of two marks for the alteration from:</p> <ul style="list-style-type: none"> • Surface area of the blades • Length or width of the drone blade • Different type or thickness of the paper <p>Award maximum of two marks for the corresponding effect such as:</p> <ul style="list-style-type: none"> • Larger surface area is slower/takes longer to drop • Longer/wider drone blade is slower/takes longer • Thicker paper drops quicker/less time <p style="text-align: right;">Maximum 4 marks</p>	4
09.1	<p>The iterative process is used in STEM industries to manufacture products from an initial concept. This process is shown in Figure 1.</p> <p>Identify the missing stages, A and B, in the iterative process.</p> <p>Marks for this question: AO1 = 2 marks</p> <p>Award one mark for each: A = Test B = Evaluate</p> <p style="text-align: right;">Maximum 2 marks</p>	2
09.2	<p>Give two methods of how a STEM industry might make a prototype.</p> <p>Marks for this question: AO1 = 2 marks</p> <p>Award one mark for any of the following points up to maximum of two marks:</p> <ul style="list-style-type: none"> • Clay model • Foam model • CAD model • AD printed or another additive process model • Producing a batch or an amount from a Chemical formula <p style="text-align: right;">Maximum 2 marks</p>	2

Qu	Marking guidance	Total marks
10.1	<p>When STEM industries create products they work to tolerances. Figure 2 shows a resistor.</p> <p>Which band in Figure 2 refers to the tolerance of the resistor?</p> <p>Marks for this question: AO1 = 1 mark</p> <p>D</p> <p style="text-align: right;">Maximum 1 mark</p>	1
10.2	<p>What does the tolerance of the resistor mean?</p> <p>Marks for this question: AO1 = 1 mark</p> <p>Award one mark only for any of the following:</p> <ul style="list-style-type: none"> • The percentage error in the resistor's resistance • How much more or less the actual resistance is from the expected resistance OWTTE • The difference between the maximum and minimum limits (of resistance) <p style="text-align: right;">Maximum 1 mark</p>	1
10.3	<p>Why is tolerance important in STEM industries?</p> <p>Marks for this question: AO1 = 2 marks</p> <p>Award one mark for each the following points:</p> <ul style="list-style-type: none"> • Tolerance is most important in engineering • It ensures that parts fit together properly • Understanding of the need for accuracy of measurement <p style="text-align: right;">Maximum 2 marks</p>	2
11.1	<p>The Circular Economy Model aims to circulate materials. Figure 3 shows part of the Circular Economy Model.</p> <p>What are the missing parts of the Circular Economy Model.</p> <p>Marks for this question: AO1 = 2 marks</p> <p>Award one mark for:</p> <ul style="list-style-type: none"> • A = Making/manufacturing parts • B = Refurbish/remanufacture <p style="text-align: right;">Maximum 2 marks</p>	2

Qu	Marking guidance	Total marks
11.2	<p>Give two environmental benefits of recycling.</p> <p>Marks for this question: AO1 = 2 marks</p> <p>Award one mark for each of the following up to maximum of 2 marks:</p> <ul style="list-style-type: none"> • Use less of earth's/non-renewable resources • Less material goes into landfill sites • Any other e.g. lowers energy use <p style="text-align: right;">Maximum 2 marks</p>	2
11.3	<p>Explain why there can be an economic benefit of recycling.</p> <p>Marks for this question: AO1 = 1 mark</p> <p>Award one mark for:</p> <ul style="list-style-type: none"> • Use less energy to recycle than make from scratch, so cheaper • Uses less labour to extract raw materials <p style="text-align: right;">Maximum 1 mark</p>	1
11.4	<p>Why is reusing or redistributing better, in most cases, than recycling?</p> <p>Marks for this question: AO3 = 4 marks</p> <p>Award one mark for each of the following points for a maximum of four marks.</p> <ul style="list-style-type: none"> • Re-using is the most efficient use of material/energy • Item is only processed/shaped once • No additional energy is needed to reprocess the material into another second product • Keeps cost down/cheaper • Effective use of non-renewable sources <p style="text-align: right;">Maximum 4 marks</p>	4
11.5	<p>Explain why recycling the steel in a car body might be better than reusing the steel.</p> <p>Marks for this question: AO3 = 2 marks</p> <p>Award one mark for each of:</p> <ul style="list-style-type: none"> • Deterioration in the steel/material • Not the right shape or thickness for purpose • Incorrect composition <p style="text-align: right;">Maximum 2 marks</p>	2

Qu	Marking guidance	Total
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		marks
12.1	<p>New technologies are emerging and developing all the time. Stereolithography is a process that has enabled STEM industries to produce prototypes more accurately and more economically.</p> <p>What is another name for stereolithography?</p> <p>Marks for this question: AO1 = 1 mark</p> <p>Award one mark for either of the points:</p> <ul style="list-style-type: none"> • 3D printing • Rapid prototyping <p style="text-align: right;">Maximum 1 mark</p>	1
12.2	<p>How does the process of stereolithography work?</p> <p>Marks for this question: AO1 = 2 marks</p> <p>Award one mark for each up to a maximum of two marks for:</p> <ul style="list-style-type: none"> • CAD drawing turned into 3D model • Photopolymerisation through the use of UV light • Build up of layer upon layer of polymer until object created <p style="text-align: right;">Maximum 2 mark</p>	2
12c	<p>What material are these prototypes made out of?</p> <p>Marks for this question: AO1 = 1 mark</p> <p>Award one mark for any of:</p> <ul style="list-style-type: none"> • Plastic • Resin (solidified) • Polymer <p style="text-align: right;">Maximum 1 mark</p>	1

Qu	Marking guidance	Total marks
13	<p>The photograph below shows an electric car. Describe two examples of how knowledge of each aspect of STEM contributes to the development and production of an electric car.</p> <p>Marks for this question: AO1 = 4 marks, AO3 = 4 marks</p> <p>Science Award one mark for each of the following indicative content points up to a maximum of two marks:</p> <ul style="list-style-type: none"> • Electrical systems/parts in a car • Overcoming inertia and forces to propel/move the car • How motors function • Battery design <p>Technology Award one mark for each of the following points up to a maximum of two marks:</p> <ul style="list-style-type: none"> • Mass production of car parts and/or automated production line so quicker to produce • Ability to make different specification of cars/ made to customer requirements • Development of more efficient batteries • CO₂ emissions/pollutants • Sensors on car for customer protection such as airbags, light sensors • More electronic features in cars for customer comfort/experience • Parts are more efficient/faster and so are smaller than previously due to new technologies/new materials <p>Engineering Award one mark for each of the following points up to a maximum of two marks:</p> <ul style="list-style-type: none"> • CAD design and simulations on computer- more streamlined • The parts are machined to align and fit with other components • New materials to manufacture and more processes to work with these new technologies <p>Maths Award one mark for each of the following points up to a maximum of two marks:</p> <ul style="list-style-type: none"> • Electronic programming of software for the driver (algorithms) • Proportions/sizes of the car/parts • Costing of parts and manufacturing • Calculations of speed/acceleration <p style="text-align: right;">Maximum 8 marks</p>	8

Qu	Marking guidance	Total marks
14	<p>John is a learner. He had a skateboarding accident and his left leg was broken in several places and had to be pinned together with a metal plate. John will be on crutches for several months and is finding it difficult to get around school with all his books.</p> <p>The Fixpert process could help John solve his problem of getting around school.</p> <p>There are five stages of the Fixpert process. Producing Prototypes and Testing have been removed. Identify the remaining stages in the correct order, explaining why they happen.</p> <p>Marks for this question: AO1 = 3 marks, AO3 = 3 marks</p> <p>Award one mark for identifying each of the three missing stages (in any order) up to a maximum of three marks:</p> <ul style="list-style-type: none"> • Identification of the problem • Finding solutions • Improvement <p>Award a second mark for a brief description of each of the three stages, up to a maximum of three marks. Possible content may include:</p> <ul style="list-style-type: none"> • Identification of the problem – meeting with Fixpartner, analyse the problem, understanding the problem, write a brief statement to explain the problem • Finding solutions – use different methods to come up with a variety of solutions, five methods of generating ideas, choose one idea to develop • Improvement – deciding which prototype to take forward and why, considering what improvements to implement, thinking about the cost, materials, scaling up for market production <p style="text-align: right;">Maximum 6 marks</p>	6

Qu	Marking guidance	Total marks
15.1	<p>The government of a country are creating a brand new city. The map below shows the initial plans for the city. There are seven locations in the city labelled A to G.</p> <p>Explain why locations A and C might be suitable for a school.</p> <p>Marks for this question: AO3 = 2 marks</p> <p>Award one mark for any of the following points up to a maximum of two:</p> <ul style="list-style-type: none"> • Both are near to residential areas/housing • Both are accessible by road/have good roads/bus routes • Both have space for playing fields/outdoor sports/car park <p style="text-align: right;">Maximum 2 marks</p>	2
15.2	<p>Which of the locations (A or C) do you think would be the best location for the school? Give one reason for your answer.</p> <p>Marks for this question: AO3 = 1 mark</p> <p>Award one mark for any of the following points (mark is for reason not for A or C):</p> <p>Best location: C Reason: More houses nearby without having to cross the road Reason: Better connected to the rest of town</p> <p>(Or Best location: A Reason: Got a bridge to get safely across the road into the city centre)</p> <p style="text-align: right;">Maximum 1 mark</p>	1

Qu	Marking guidance	Total
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		marks
15.3	<p>Planners are deciding where to build a hospital for the city. There is some disagreement about whether to build the hospital in location D, F or G.</p> <p>Give one advantage and one disadvantage of each location.</p> <p>Marks for this question: AO3 = 9 marks</p> <p>Possible content may include:</p> <p>Location D:</p> <ul style="list-style-type: none"> • Advantages might include: good road access/transport, enough space for a car park, near offices so wont disturb residents • Disadvantages might include: not a central location, nice green space so shame to build on it <p>A maximum of 2 marks to be awarded for this part of the question. 1 for advantage, 1 for disadvantage.</p> <p>Location F:</p> <ul style="list-style-type: none"> • Similar to D in terms of advantages: good road access and even more space for plenty of parking spaces • Disadvantages: Even more green space than D so should be kept as green space for benefit of residents <p>A maximum of 2 marks to be awarded for this part of the question.</p> <p>Location G:</p> <ul style="list-style-type: none"> • Advantages: Best access of all three due to its central location, easiest to get to by bus, by car and on foot. Doesn't reduce the green space in the city by building here • Disadvantages: little space for parking, <p>A maximum of 2 marks to be awarded for this part of the question.</p> <p>Overall opinion as to the best location is explained using the above points. No mark for the actual location but 3 marks for 3 reasons. A maximum of 3 marks to be awarded for this part of the question.</p> <p style="text-align: right;">Maximum 9 marks</p>	9

Qu	Marking guidance	Total marks
15.4	<p>Construction is an important STEM industry. Give one example of how Science, Technology, Engineering and Maths would each need to be considered during the construction of this new hospital.</p> <p>Marks for this question: AO3 = 4 marks</p> <p>Award one mark from each area of STEM. Examples are:</p> <p>Science</p> <ul style="list-style-type: none"> • Composition of different materials (atoms/molecules/formulae) • Properties of different materials used in the construction • Hazard and risk assessment <p>Technology</p> <ul style="list-style-type: none"> • Design/plan of the building/car park e.g. spaces/lighting/communications • Consideration of any new materials • Mass production of construction materials e.g. bricks <p>Engineering</p> <ul style="list-style-type: none"> • Aligning various build materials to fit together • Stresses and strains on materials <p>Maths</p> <ul style="list-style-type: none"> • Cost of the individual components/total build • Sizes/dimensions of the spaces <p style="text-align: right;">Maximum 4 marks</p>	4

Qu	Marking guidance	Total marks
15.5	<p>Communication is another important STEM industry. Give one example of how Science, Technology, Engineering and Maths would each need to be considered in planning and building the city's communications network.</p> <p>Marks for this question: AO1 = 4 marks, AO3 = 4 marks</p> <p>Award one mark from each area of STEM. Examples:</p> <p>Science</p> <ul style="list-style-type: none"> • Waves (sound/microwaves) • Satellite communications • Fibre Optics/light waves/impedance and alteration <p>Technology</p> <ul style="list-style-type: none"> • Manufacturing parts/devices • Testing efficiencies of parts/devices <p>Engineering</p> <ul style="list-style-type: none"> • Microelectronics • Computer simulation <p>Maths</p> <ul style="list-style-type: none"> • Costs of production/installation • Measurement of distances/calculations of wave speeds <p style="text-align: right;">Maximum 8 marks</p>	8