

This test is divided into non-calculator (30 minutes) and calculator (20 minutes) sections which can be delivered separately.


The following marks are awarded for each question.

B	Unconditional accuracy mark
M	Method mark – the correct method must be shown but there may be an arithmetic error; the sight of the value given in brackets implies the award of the method mark
A	Accuracy mark – unless the question specifies that working must be shown then the sight of the correct answer implies the award of full marks (unless the answer clearly comes from incorrect working)
C	Communication mark
P	Process mark to show correct process for problem solving. Any other process of a similar standard to achieve an accurate result is acceptable to achieve this mark
FT	Incorrect values may be followed through from one step to the next provided that the correct method is seen in each step and the only errors are arithmetic. This is shown in mark schemes by putting a number in inverted commas
OE	Or equivalent answer mark

Non-Calculator			
Q	Answer	Mark	Comment
1a	$8\frac{1}{4}$	M1	attempts to change both fractions to an improper fraction with at least one of them correct, e.g. $\frac{11}{5} \times \frac{15}{4}$
		A1	$\frac{33}{4}$ or $8\frac{1}{4}$ OE
1b	$2\frac{1}{2}$	M1	attempts to change both fractions to an improper fraction with at least one of them correct or finds the reciprocal of their second improper fraction, e.g. $\frac{25}{8} \times \frac{4}{5}$
		A1	$\frac{100}{40}$ or $\frac{5}{2}$ or $2\frac{1}{2}$ OE
3a	50700	B1	
3b	0.000038	B1	
5a	1	B1	


5b	3	B1	
5c	$\frac{1}{3}$	B1	
5d	$\frac{1}{9}$	B1	
7a	$\frac{8}{27}$	B1	
7b	25	M1	for squaring or the inverse, e.g. $\left(\frac{1}{5^2}\right)^{-1}$ or $\left(\frac{1}{25}\right)^{-1}$ or 5^2
		A1	25

9	$3\frac{1}{3}$ inches	M1	for dividing the fractions, e.g. $9\frac{1}{6} \div 2\frac{3}{4}$ or $\frac{55}{6} \div \frac{11}{4}$
		M1	$\frac{55}{6} \times \frac{4}{11}$ OE or $\frac{110}{12} \div \frac{33}{12}$
		A1	accept $\frac{10}{3}$

 Calculator			
11a	One correct error explained eg you can't split a mixed number or should convert to an improper fraction first	C1	
11b	One correct error explained eg you don't find the reciprocal of the first fraction oe	C1	
13	1.44×10^{10}	M1	Calculates the numerator first, e.g. 3.6×10^6
		A1	1.44×10^{10}
15a	1.3×10^{-13}	P1	process to calculate the volume with a rounded radius, e.g. $4\pi(1 \times 10^{-7})^2$
		A1	answer in the range 1.2×10^{-13} to 1.3×10^{-13}

15b	Explanation eg underestimate as the numbers are rounded down	C1	
17	2×10^3	B1	
19	3	P1	for process to work out the thickness of a ream, e.g. $8.6 \times 10^{-3} \times 500 (= 4.3)$
		P1	for process to work out how many reams will fit in the drawer, e.g. $14 \div 4.3 (= 3.255\dots)$
		A1	3

Non-Calculator			
Question	Topic	Step	Mark
1a	Multiplying mixed numbers	8th	2
1b	Dividing mixed numbers	8th	2
3	Write numbers in standard form as ordinary numbers	8th	2
5	Substitution involving negative powers and power of zero	9th	4
7a	Work out a fraction cubed	8th	1
7b	Work out a fraction to a negative power	9th	2
9	Problem solving leading to dividing mixed numbers	8th	3

 Calculator			
11a	Identify a mistake in multiplying mixed numbers	8th	1
11b	Identify a mistake in dividing mixed numbers	8th	1
13	Calculation with numbers in standard form	8th	2
15a	Problem solving leading to estimation calculation with numbers in standard form	9th	2
15b	Decide if an estimate is over or under and explain answer	7th	1
17	Work out a reciprocal in standard form	8th	1
19	Problem solving leading to calculation with numbers in standard form	8th	3